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Chimneys Limited.
Danks, H. & T.
Furse, W. J. & Co., Ltd.

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Chalmers-Edins Co
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Parker, Winder & Achurch
Ransome Machinery Co. Ltd.
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Whitaker, E. G., Ltd.

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Barb Rug. Co.
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Concrete Units Co.
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Somerville-Bayard
Stuart's Granolithic Co., Ltd.
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Builders and Contractors Plant, Ltd.
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Kerner-Greenwood & Co (Pudic
McNeill, F. & Co., Ltd.
Permanite, Ltd.
Ragusa Asphalte Co., Ltd.
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Vulcanite, Ltd.
White W.

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Moore, W. & Co.

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Wiggins, G.

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Young & Marten, Ltd.

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Nicholls & Clarke, Ltd.
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Stanley, W. F. & Co., Ltd.

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Osram

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Lewis & Lewis, Ltd.

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Eastwoods, Ltd.
Leeds Fireclay Co., Ltd.
Rufford & Co
Sankey, J. H. & Son Ltd.

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Davis, E. & C., & Co., Ltd.
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Lift & Hoist Co.

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Haywards, Ltd.
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Marble Mosaic Co.
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Simpson, W. B. & Sons
Stubbs, J. & Sons
Vitrolite Construction Co. (Europe), Ltd.

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Nobles & Hoare, Ltd.
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Rose, Sir A. W., & Co., Ltd.
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Concrete Slabs Co.
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[For continuation of "Analysis of Advertisements" see page lxxxii.]

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THE BUILDER

A JOURNAL FOR THE ARCHITECT AND CONSTRUCTOR.

WITH WHICH IS INCORPORATED "THE BRITISH ARCHITECT."

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THE HOUSING BILL.

WHILE the main financial provisions of the new Housing Bill are as foreshadowed, a measure that might have been of real benefit to the community has degenerated in this Bill into a contemptible political compromise. If it had been specially prepared by a Conservative Government to show how short-sighted it was possible for Government interference to be, it could not have been more effectively designed to that end. We are prepared to allow that the Government may be right in only subsidising the non-parlour house, but when we turn to the proposals as to the standard of the subsidised house we find only two conditions imposed :—

(*a*) A two-storied house with a minimum of six hundred and twenty and a maximum of eight hundred and fifty superficial feet; or

(*b*) A flat or a one-storied house with a minimum of five hundred and fifty and a maximum of seven hundred and eighty superficial feet.

The latter figure is merely obtained by deducting seventy square feet, representing the space occupied by the staircase, from the former, and the minimum areas are both of them utterly absurd; they are indeed so inadequate that one can only express astonishment that the Ministry of Health should have the effrontery to produce them. It is not a question of whether there is or is not space for a parlour, but whether there is space for a habitable home at all. We regard the provision of three bedrooms as an essential to the decent housing of a mixed family; there exist already more than enough two bedroom houses, and we do not for a moment agree that the taxpayers' or ratepayers' money should go to the erection of the exiguous dwellings, too small to contain even two adequate bedrooms, that the Minister of Health proposes to subsidise. We fully realise that the maximum size is reasonable for a non-parlour house, but the tendency will, of course, be to erect the minimum rather than the maximum, and we may be sure that the Treasury will do all it can to insist on the minimum, seeing that its contribution will be less for the "rabbit hutch" than for the house.

Our indictment does not end here. The Bill contains no guarantee that slums will not be erected, and we regard it as a clear and vital principle of Government that public money should be spent for the public good. Safeguards in this direction are, one would have thought, essential, and here we find them entirely neglected. No limit is set on the number to the acre, and in this direction a statutory limit would have been acceptable to everyone. We cannot conceal our astonishment at this amazing Bill, since it has been generally understood that the Ministry of Health would be kept free from the reactionary tendency that has been visible elsewhere. This measure cannot fail to reflect on the Government's chances of a prolonged life, since it will rightly be considered that any Government that can contemplate such a measure is a public danger, no matter how much the Bill may be altered by force in its passage through the House.

In respect to private enterprise, local authorities are empowered to give assistance to schemes submitted to and approved by the Ministry provided that the houses are of the sizes already given, and provided also "that there is a need for such houses within the area of the local authority, and that such need cannot be met without assistance under this Act." It is hard to see how any local authority could prove that a need "cannot be met," although they might show that it was not being met, and the wording, if it remains unaltered, is likely to cause endless bother and argument. Assuming that the local authority has succeeded in proving that such assistance is necessary, it may be given either as a lump sum on completion, as a refund on the rates, or as part payment of periodical sums payable by way of interest to a building society. The local authority is empowered in this case to specify conditions that may receive the Minister's approval. A proviso of this kind is clumsy in working, and cannot fail to handicap the private builder. One single statutory requirement that no State-aided housing may be undertaken at a greater density than in the proportion of twenty houses to the net acre, when combined with the reasonable floor areas, would meet all that is required beyond existing regulations, and the host of varying conditions against which private enterprise will have to contend under this clause could be obviated.

We are glad to note that provision is made for the rectification of obstructive by-laws in regard to the level, width and construction of new streets, and that the Minister reserves the power himself to remove the antiquated by-laws where, by local inquiry or otherwise, he is satisfied that the erection of any buildings is likely to be "unreasonably impeded" by the existence of such by-laws. While it is obviously desirable that the Ministry should have such powers, it is doubtful as to how far they will be used unless those locally concerned take more interest in the question than they have done in the past. A further proviso concerns the time within which councils of boroughs and urban districts are required by the Housing, Town-Planning, &c., Act, 1919, to prepare and submit town-planning schemes; the time is extended to six years from January 1, 1923, instead of three years. One would have thought that three years was quite sufficient, and we are afraid that the extra latitude allowed will merely be used by the less enterprising authorities for shelving proposals.

The Government's inadequate standard of size and disregard of density is all the more inexplicable and unjustifiable in that the insistence upon a suitable standard in both would make no difference whatever to the Government's liability, assuming the latter to be fixed at a certain sum per house. The whole principle of a sliding subsidy making it to the Government's advantage that ridiculously small houses should be built is fundamentally wrong, and we hope it will be resisted to the utmost in Parliament. We have ourselves consistently stood out for a high standard of housing, no matter by whom it may be undertaken. While regarding free and conscientious private enterprise as the ideal solution to the problem, we have been prepared to accept State aid only when it has pointed to a high ideal. The present Bill should be sufficient to convince the most fervid supporter of State interference in housing that he is on the wrong track if he is out for improved conditions; but it would be uncharitable to imagine that this Bill was designed for that very purpose.

NOTES.

The Building Trade Dispute.

The settlement in the building trade dispute, although only of a temporary character, is all to the good and both sides are to be congratulated on their agreement to refer the matters in dispute to an arbitrator appointed by the Lord Chief Justice. Strikes or lock-outs rarely if ever give any solid advantages to anyone, and when they end by the defeat or exhaustion of one side or the other the evil results to an industry altogether outweigh any possible good that may result. And when the possibility of a strike or lock-out in the building industry is seriously contemplated at a time like the present, with serious unemployment on all hands and a great national need for continuous building, the need for an independent arbitrator for the settlement of such disputes appears to be of urgent importance. The appointment of Sir Hugh Fraser by the Lord Chief Justice will, we hope and believe, give satisfaction to both employers and operatives, while the appointments made of Mr. Greenwood (Messrs. Holliday & Greenwood) by the masters, and Mr. A. G. Cameron (Secretary of the Amalgamated Woodworkers, Manchester) by the operatives should go a long way to ensure a fair and impartial hearing of all the facts and a just and wise settlement, which is what we all want and what the circumstances require.

London Street Architecture Medal.

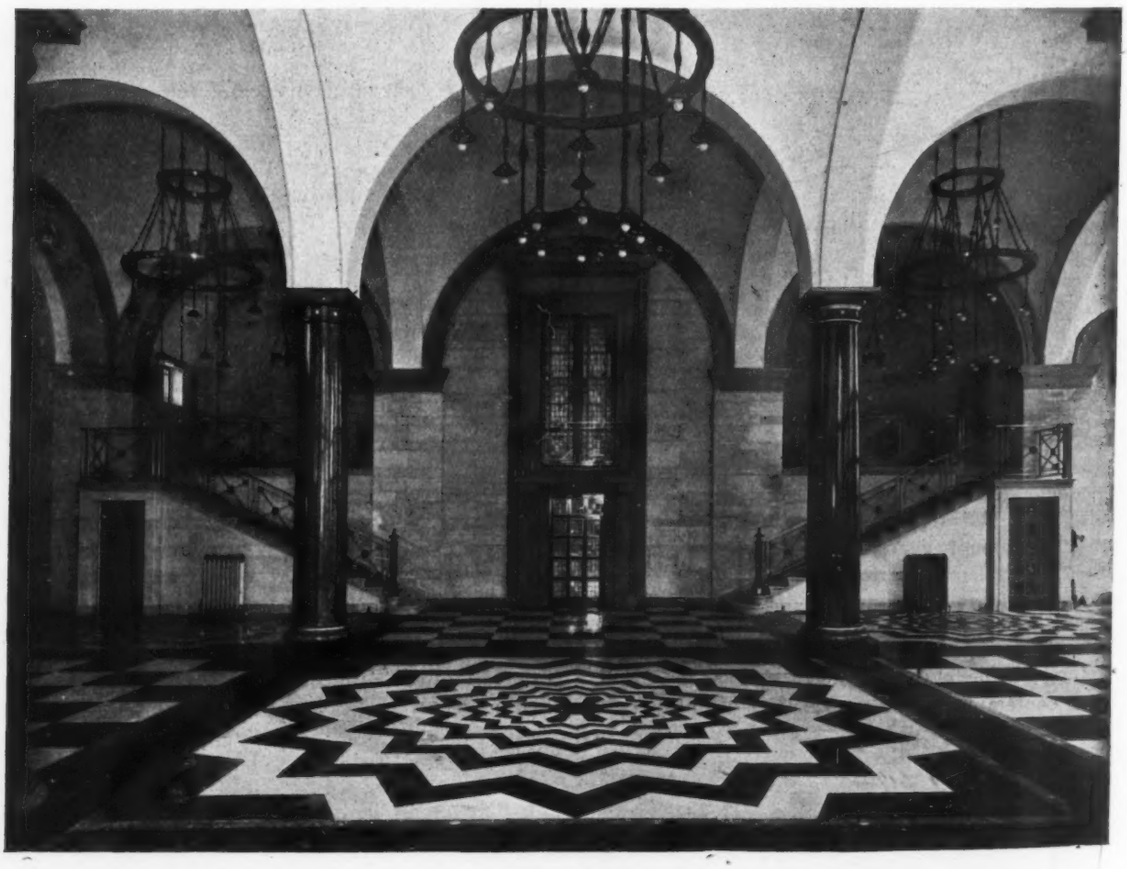
Mr. W. Curtis Green, F.R.I.B.A., has been awarded the medal presented by the R.I.B.A. for a street frontage completed during the year 1922 for his building, Wolseley House, 157–160 Piccadilly, W. The choice was made by a jury which consisted of the Earl of Crawford and Balcarres, Hon. F.R.I.B.A. (chairman), Sir Aston Webb, P.R.A., Mr. Paul Waterhouse, P.R.I.B.A., Sir Reginald Blomfield, R.A., and Mr. E. Guy Dawber, F.R.I.B.A. We feel sure the jury's decision will meet with the approval of all. Wolseley House (which we illustrate on pp. 632 & 3 and 643) is undoubtedly a model of what street architecture should be, and we congratulate Mr. Curtis Green on being the first recipient of the honour, and the Committee on its choice.

Canvassing and the R.I.B.A. Election.

Professor Adshead's letter on canvassing for the forthcoming election of the R.I.B.A. Council, which we print on p. 637, gives expression to opinions which have hitherto been shared by most members of the Institute and we are sure there will be hearty endorsement even now of much that he writes. But has not canvassing in one way or another been practised for years past? As it is not always a palpable act, we do not see how it can be avoided, unless the individuals or groups pledge themselves to abandon a practice which loses its value if all adopt it. That is surely to be preferred to any development of party politics which, as he says, threatens "to subvene, sacrificing as they necessarily must do, the general interest of the Institute for party issues, or for one issue alone." But we rather fear, where opinion is sharply divided, any suggestions of the kind are unavailing, and that at this election we shall find at least two parties canvassing for the forthcoming Council election. While we agree in principle with the last paragraph of Professor Adshead's letter, is it not likely that the practical acceptance of his advice would, if one group canvassed and voted *en bloc* and everyone else voted for the candidate of their choice, defeat the ends he has in view?

The R.I.B.A. Code of Ethics.

The surprise which was felt at the withdrawal of the Code of Ethics by the R.I.B.A. may be perhaps well founded. If it had been a question of laying down a new Code of Ethics we could have better



Wo'sley House, Piccadilly, W. Mr. W. Curtis Green, F.R.I.B.A., Architect.
[Awarded R.I.B.A. Medal for the best Street Frontage in London completed during 1922.]

Wolseley House, Piccadilly, W Mr. W. Curtis Green, F.R.I.B.A., Architect.

understood the objections to be raised, but deliberately to withdraw a code in ethics which has so near a parallel in those adopted by architectural bodies in both France and America strikes a little unpleasantly. The notes on the subject by Mr. Sydney Perks in the R.I.B.A. Journal, in which he shows that other professions in this country have not adopted such codes, are of interest, but in the circumstances mentioned above the action of withdrawal will be looked upon by many as a mistake.

Victory Scholarship Competition, 1923.

We give on p. 642 particulars relating to two of the Society of Architects' competitions, entries for which must be deposited within the next few weeks. The American Scholarship, which is to be awarded this year for the first time, is calculated to appeal chiefly to the advanced student, the junior academic man and the young practitioner of good education and experience. The holder will be required to spend not less than six months in the United States during which time he will study a particular aspect, or particular department, of contemporary architecture or civic design. The Victory Scholarship has now been offered three years in succession. Last year not less than fifty-six entries were received, and competitors prepared designs under special supervision at seven different centres distributed throughout the Kingdom. Competitions of this kind are of great importance in relation to the progress of the art of architecture in this country, and we have no doubt they will not be overlooked by our students.

Whitgift Hospital.

It is of interest at this juncture that a booklet, entitled "Destroying an English Work of Art: the case for the preservation of the historical and beautiful building, the Whitgift Hospital," should be issued by the Royal Institute of British Architects' Art Standing Committee, Royal Academy, Society of Antiquaries, Society for the Protection of Ancient Buildings, and many other bodies (price 2s.), in which the facts of the position are brought out clearly. The case has been well argued in the Press, and the public is now acquainted with the facts. Croydon has little to show of historical interest, and that in itself should be a reason why such a work of art should be preserved, especially as the present inhabitants of Croydon who desire the removal of the hospital cannot represent opinion for all time, and it might very well be that the next generation would deeply regret the loss of one of the few interesting works of this kind which Croydon possesses.

Cheaper and Better Concrete.

The haphazard methods which still so often characterise concreting operations are a source of wonder to those who have followed recent researches on this material, for it has been amply proved that to get the best results the mixing and placing of concrete should be treated as an exact science in the same way as other building materials. It says much for the material, indeed, that in spite of the slip-shod workmanship so often to be seen failures are rare. When it is generally realised that the best methods are also the cheapest, efforts will undoubtedly be made to obtain the best results. In an interesting lecture to the members of the Architects' & Surveyors' Assistants' Professional Union (*see p.* 640) Mr. E. Fiander Etchells, President of the Institution of Structural Engineers, pointed out that the addition of 2 per cent. more water than the correct amount for any given mix will reduce the strength by 20 per cent., and an excess of 5 per cent. will reduce the strength by 30 per cent. In other words, the more water used above the correct amount requires correspondingly more cement to make up for the decreased strength due to the excess of water—and water and cement both have to be paid for!

The Late E. T. Hall.

By the death of Mr. Edwin T. Hall, F.R.I.B.A., the profession loses one of its ablest specialist architects, for although Mr. Hall carried on a general practice for many years, he made his reputation as a hospital architect, and was responsible for some of the best of this type of building. We give on p. 635 some notes of his career, but we desire to add here our expression of regret at the passing of one who, for so many years, occupied a deservedly prominent position in the profession. By his works he will be known, and those who understand—and what architect does not?—what the designing and erecting means of even one of our great modern hospital buildings cannot fail to hold in high esteem the name of the architect of so many of these institutions.

GENERAL NEWS.

Professional Announcements.

Mr. C. N. Beeston, A.R.I.B.A., has commenced practice at Birchington-on-Sea, Kent. His address is Quex Farm, Birchington-on-Sea.

Messrs. Ball & Hull-Brown have opened an office at 155, Duke-street, Liverpool, and are prepared to receive catalogues, &c.

Mr. George Hornblower, F.R.I.B.A., announces that he has taken into partnership Mr. Ralph W. Thorp, A.R.I.B.A., of 5, Hammersmith-terrace, London, W.6. The practice will be carried on at 2, Devonshire-terrace, Portland-place, London, W.1, under the name of Messrs. Hornblower & Thorp, architects.

Mr. R. Alfred Barber, A.R.I.B.A., late Housing Architect to the Corporation of Taunton and Chief Assistant Architect, Somerset County Council, has commenced practice at No. 11, Sunnyside-road, Weston-super-Mare.

Mr. C. Gordon Huntley, A.M.I.E.E., M.I.H.V.E., and Mr. William W. Wood, A.R.I.B.A., have entered into partnership and commenced practice as consulting engineers under the style of Huntley & Wood, at P. & O. House, Cockspur-street, London, S.W.1. They are specialising in heating, ventilating and illuminating, and are prepared to receive trade catalogues.

Messrs. Cyril B. Tubbs and A. A. Messer, of Craig's Court House, S.W.1, have taken into partnership Mr. G. Val Myer, A.R.I.B.A., late of 58, Marylebone-lane, W.1. The style of the new firm will be "Messrs. Tubbs, Messer & Val. Myer," and the business of the firm will be carried on at Craig's Court House, Whitehall, and 4A, Sea-road, Bexhill-on-Sea. (Telephones: Gerrard 4915 and Bexhill 489.)

King's College, Strand

Professor Percy Dearmer's lectures at King's College, Strand, next term will be as usual on Tuesdays at 5.30 p.m. in the Great Hall, beginning on May 1 and ending on June 5. The course will begin with an architectural lecture on "An old town unspoilt," and will deal with the early great masters before Raphael, also with Titian, Tintoret and Veronese. A prospectus of the lectures can be obtained from the Lecture Secretary, King's College, Strand, W.C. 2.

Empire War Memorial.

At a meeting of the Empire War Memorial League, held at the United Services Institution, Whitehall, on Tuesday last, and presided over by Sir Gilbert Parker, Bart., P.C., D.C.L., LL.D., Major Richard Rigg gave a lecture on "Some Aspects of an Empire War Memorial," in the course of which he explained the proposal of the League to erect an Imperial War Memorial at Westminster, and to transform the miserable surroundings of Victoria into a model city. Amongst those present who took part in the discussion were Sir Edward Lucas (South Australia), Brigadier-General Magnus Mowat, General De La Panouse and Ald. Granville Smith.

Fashion Fair.

Holland Park Hall has been transformed into fairyland for the *Daily Mirror* Fashion Fair, which was opened on Monday last by Lady Torrington. The exhibition is a brilliant scene of colour bathed in pale moonlight. Contrasting with the deep blue of the balcony and its biscuit and red frieze are the many-coloured cupolas crowning the stalls. In the centre of the hall is the "Temple of Fashion." The background for the examples of the designer's art is provided by well-considered lighting effects.

The R.I.B.A. Conference.

The annual conference of the Royal Institute of British Architects will take place at Edinburgh on June 13–16, in conjunction with the annual convention of the Incorporation of Architects in Scotland. All Members and Licentiates of the R.I.B.A. and all members of the Architectural Association and of the Allied Societies are cordially invited to attend the Conference. On Wednesday, June 13, members of the conference will be entertained by the Incorporation of Architects in Scotland at a smoking concert at 15, Rutland-square. On Thursday, June 14, the conference will be accorded an official welcome by the Lord Provost and Magistrates of Edinburgh, after which two papers on professional subjects will be read and discussed. At 1 p.m. there will be a luncheon in the Banqueting Hall of the Castle, followed by a drive to Holyrood Palace and other places of interest. From 4.30 to 6 p.m., an "At Home" will be held in the National Gallery. At 8 p.m. there will be a reception by the Lord Provost at the Council Chambers. Friday, June 15, will be devoted to a char-a-banc tour to Melrose, Dryburgh, and Peebles, with luncheon at Melrose and tea at Peebles. At 7.30 p.m. the conference banquet will take place at the Freemasons' Hall. Saturday, June 16, will be devoted to visits and excursions arranged individually by members of the conference.

COMPETITION NEWS.

"THE BUILDER" COST OF BUILDING COMPETITION, No. II.

Some notes on Part II of *The Builder* Cost of Building Competition (open to builders) are given on p. 667.

Tunbridge Wells.

For the Town Council.—Designs for a pavilion. Sending-in day, July 3. The conditions can be perused at *The Builder* Office.

The R.I.B.A. and the Society of Architects call attention to the fact that the conditions of the above competition are not in accordance with the Regulations, and members are advised to take no part in the Competition.

Other Competitions.

Other competitions still open include the following (the dates given are, first the sending-in date, and second the issue of *The Builder* in which full particulars were given):—Haifa Business Centre (May 15, March 9) Bournemouth Pavilion (May 12). Cork Municipal Buildings (June 1, March 16). Singapore College (Jan. 1, 1924; March 30). Melbourne War Memorial (June 30; April 13).

Sketch at Quirinale.

Church-lane, Petergate, York.

From Sketches by Mr. H. T. Rees.

THE LATE EDWIN THOMAS HALL, F.R.I.B.A.

By PAUL WATERHOUSE (President of the R.I.B.A.).

It is a special, though melancholy, pleasure to me to be allowed to offer some homage to the life of an old friend by contributing a brief biography of one whose death (on April 15) has fallen very suddenly upon us, and I come forward with these notes upon his life qualified chiefly by the fact that there are few who have enjoyed more personal memories of his career of usefulness to his brother architects.

Hall came of architectural parentage, for his father, George Hall, who practised in Victoria-street, was known in his time as the designer of buildings in several parts of the country as well as in London. Two of Hall's brothers became constructional engineers. His birth took place at Lowestoft in 1851, and it was at an early age that his choice of architecture as a future profession was made. This choice was fostered by some early opportunities of foreign study, for at the age of 15 and 16 he began a series of Continental wanderings which, starting with Belgium and Northern France, continued at intervals throughout his life and at least down to 1909. Paris, Brittany, the South of France, Switzerland, Italy, the Baltic, Germany, Norway, and even India, were all in their turn visited or revisited, and in all architecture and its study were the subjects of his attention and interest.

At some date in the 'sixties Hall spent two years at the South Kensington School of Art as an architectural student, and his regular office training was obtained under Joseph Fogerty, F.R.I.B.A., M.Inst.C.E., with whom he remained until he started practice on his own account. Probably the engineering side of his master's occupation contributed not a little to the constructional and scientific abilities of the pupil's after-career. A year before Hall left Fogerty's office he initiated, by arrangement with his master, the beginnings of a personal practice, and in 1875 we find him installed in the City office, which he subsequently abandoned for the office at the south-east corner of Bedford-square, which he occupied to the last days of his life.

His work may be divided into domestic commissions, factories and warehouses, offices, hospitals and sanatoria, and shops. To mention the last first, it is well known that he was engaged on the rebuilding of Messrs. Liberty's vast building at the angle of Regent-street and Argyll-place. This great site has a frontage of over 200 ft. in Regent-street, and extends eastward as far as Great Marlborough-street. It will be recalled that though a stone treatment is to prevail on the western façade of the design, the frontage in Argyll-place is of a half-timber type, Hall having, with characteristic persuasion, won his way with the County Council as to the legitimacy of timber framing as a fire-resisting material for an external wall. London awaits with interest the result of this bold experiment, the completion of which, as no doubt most of Hall's work, is in the capable hands of his son and partner, Mr. E. Stanley Hall, who, during the war, divided his time between the duties of a captaincy in the Queen's Royal West Surrey Regiment and the architectural war work in which he was his father's partner.

It is, perhaps, as a hospital designer that Hall was most appreciated by his many clients. During the war he carried out—I believe in an entirely honorary capacity—the vast work of transforming H.M. Stationery Building near Waterloo Station into a hospital for nearly 2,000 beds, as well as the Welsh War Hospital at Netley, remarkable for having been constructed in eight weeks from the date of receiving instructions to the moment of occupation, his son being his collaborator in both of these efforts.

The Manchester Royal Infirmary, though competed for and carried out in conjunction with Mr. John Brooke, of Manchester, stands out as Hall's best known achievement. It cost nearly £400,000, and is a monument of his special skill in the achievement of those essential and intricate elements in a building of hygienic purpose which are not always classed as architecture. Every problem connected with drainage, heating, ventilation, and general sanitary efficiency received from Hall an almost loving interest which placed him in the forefront of practical schemers, and made him in many departments of domestic engineering a forerunner and pioneer. His success in winning (in 1894) the competition for the large hospital at Hither Green brought him much other work of like nature. Two hospitals were erected for the City of Leeds where treacherous foundations were successfully combatted by Hall's favourite system of "raft" foundation. Camberwell Infirmary, Plaistow Hospital, the extension of St. George's Infirmary, the Barnato-Joel Cancer Research Block at the Middlesex Hospital, special wards and a Nurses' Home at the Caterham Asylum, the Home at Brompton Hospital, and the Sir Henry Tyler wing of the Homeopathic Hospital in Queen-square are other conspicuous examples of his work. For other hospitals he carried out only initial instalments; for example, the out-patients' department for the Jewish Hospital at Stepney, and the same for the Battersea Hospital.

In designing the Frimley Sanatorium for the Brompton Hospital, Hall won a victory over some opponents on the Board, and convinced them, after they had ordered a remodelled designing, to return to his original intentions. The completed design won a prize at the Washington Congress. His determined, and then original, designs in sanatoria found further exemplification in the South Wales Sanatorium at Pontywal, near Talgarth, the Lenham Sanatorium for the County of Kent, and that at Godalming, though all these differ in their distinct characteristics, the differences being due to site and to requirements. Hall was often employed as consulting architect in work of this class, and at Streatham he completed with amendment of his own the British Home for Incurables which the untimely death of Arthur Cawston in 1894 left without an architect.

Hall's factory practice was also important. Of this class of buildings it will be sufficient to give typical examples; so I content myself with mentioning those executed for Messrs. Epps & Co., at Blackfriars, and Messrs. Causton & Sons, in Clapham-road.

Hall was not without church work, though this did not constitute any large proportion of his activities.

Of domestic work both large and small he had a good share. He designed Sloane Mansions in Sloane-square, and several houses in Cadogan-square and Pont-street. The Broad-street Station Dwellings in Finsbury, St. George's Home for Children at Chelsea, and all the houses on the Beech Hill Park at Hadley Wood were from his designs. A very large work of his was the block containing many hundreds of rooms known as St. Ermin's, near St. James's Park Station, Westminster.

His family life was a singularly happy one. He married in 1878 Florence, the eldest daughter of the late Julian Byrne, of the Madras Railway, and he leaves, besides his widow, three sons and four daughters, three of whom are married, one to the Vicar of St. Stephen's, Dulwich.

As a Vice-President of the London Society, he took a vital interest in London improvements, and was the author of a design (in 1915) for an Imperial Memorial, which included the destruction of Charing Cross Bridge, the removal of Charing Cross Station to the Surrey side, the erection of a road bridge in place of the railway bridge, and the construction on the Middlesex side of an Imperial Palace and large open squares or "place."

He won two gold medals at the Milan Exhibition for his architectural exhibits.

I have left to the close his work at and for the Royal Institute of British Architects, work which among his architect friends is, perhaps, a more intimate memorial than his work as a designer. He achieved the position of Vice-President, but to say this only is to belittle the strength and the great variety of his services. Even if I add that he was a most industrious secretary of the Practice Standing Committee, and eventually one of the very best chairmen, as well as a member of several others, I have given no idea of his self-sacrificing work for the Institute.

There are many classes of mind in this world, and it is sometimes by the prevalence of unreasonable mentalities that we appreciate what the truly orderly mind might be: Hall's was the orderly mind; problems set themselves out in his sight in a logical disposition. He enjoyed tidiness in words and argument. For such a mind there are two calamities possible. The one is that the engine of thought may be used maliciously; the other that the same engine may before life is ended fail its owner. From both of these calamities Hall was spared: from the first by his kindly nature, from the second by a continuance of health to which his own personal pluck was no doubt largely contributory. It is a happiness to his friends to know that clear thought was his possession to almost the last hour, and to realise that a man to whom life was work was enabled to lay down his task without that interval of disordered twilight which would have been to him if not intolerable at least a very grievous burden.

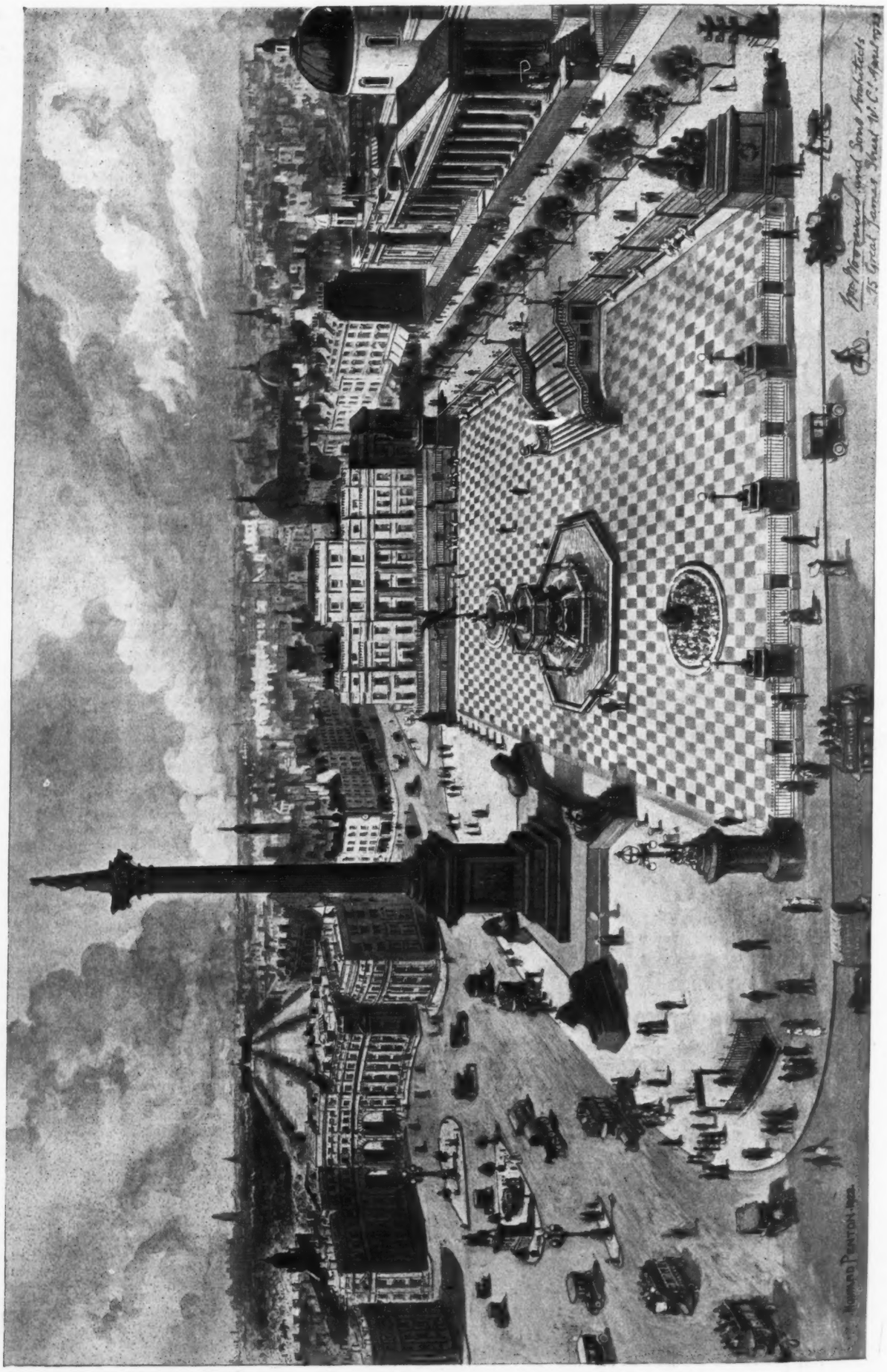
Among the many buildings which Mr. E. T. Hall designed were St. Ermin's Hotel at Westminster, Manchester Infirmary (in conjunction with Mr. J. Brooke, of Manchester), Park Hospital at Hither Green, Plaistow Hospital, St. George's Children's Home at Chelsea, Dulwich College Library, the head offices of the Metropolitan Asylums Board, the Seacroft and Killingbeck Hospitals at Leeds, Camberwell Infirmary and Guardians' offices, Frimley Sanatorium, the new wing and Nurses' Home of the London Homœopathic Hospital, the Barnato Memorial additions to the Middlesex Hospital, the South Wales Sanatorium and Meadowslea Hospital in Cheshire for the King Edward VII Memorial, the Welsh War Hospital at Netley (in conjunction with Mr. E. Stanley Hall), sanatoria in various parts of the country, St. Paul's Church at Edenbridge, Waverley Park Mission at Nunhead, mission halls at Dulwich and Brixton, Infirmary and Nurses' Home at Caterham, Fulham Workhouse, enlargement of West Ham Infirmary, additions to the British Home for Incurables at Streatham, and alterations and enlargement of St. Bartholomew's Hospital at Chatham.

Mr. Hall was elected to the Council of the Royal Institute of British Architects in 1901, and was a Vice-President in 1905, becoming Senior Vice-President in 1908. He was elected a member of the Practice Standing Committee of the Royal Institute in 1896.

He represented the Institute at the British Congress on Tuberculosis held in London in 1901, and was appointed to represent the Institute in 1908 on the Sectional Committee on Bridges and General Building Construction, of which Sir John Barry was Chairman.

In 1903 he was elected a member of the Council of the Architects' Benevolent Society, and was re-elected in 1905–6 and again in 1907–8, and in 1908 he was elected a Vice-President of the Society.

The funeral took place on Wednesday at Elmer's End.



Trafalgar Square: Suggested Improvement Scheme.

(See letter on following page.)

CORRESPONDENCE.

[While we are glad to publish letters on professional and other matters of interest to our readers, it must be understood that we do not necessarily endorse the remarks of correspondents, who will oblige us if they will express their views as briefly as possible.]

Building Trade Dispute: Forward the Investor!

Sir,—Now that a settlement has been arrived at in the above matter, a certain point arising therefrom is in danger of being forgotten; for the general public is proverbially short-minded.

The general public has been good enough to interest itself in the dispute which recently divided the two parties mainly concerned, viz., the employers and operatives in the industry. No doubt it was justified in this. The welfare of any industry affects the welfare of the community; and to that extent everyone is involved, and a stoppage, especially at the present, in building operations, could not fail to be utterly disastrous. Such a realisation it was that enabled a settlement to be come to at the eleventh hour of the dispute; and the general public was no doubt exceedingly relieved thereat.

But what may not be so fully realised is the fact that this settlement was only effected by sacrifices on the part of both parties mainly concerned. Both the employers and the operatives have made considerable sacrifices in order to avoid a stoppage, and particularly with a view of enabling the community's great need for buildings to be supplied.

Now that these sacrifices have been made is there not something due from that third party, the general public? Or is the investor still to continue to wait for yet another reduction in costs before he sets free the building work which he has in contemplation?

H. Bryant Newbold,
Editorial and Organising Secretary, The National Federation of Building Trade Employers of Gt. Britain and Ireland.

[**** We agree, and it is for this reason that we said last week that the public will always be the determining factor, and any uneconomic agreement between employer and operative will break down.]

Election of Council R.I.B.A.

Sir,—With reference to the forthcoming election of Members of Council of the Royal Institute of British Architects, it seems that members are being widely canvassed by party politicians, and that an attempt is being made to split the Institute into definite political groups.

So far as I am aware, up to the last election, except in comparatively trivial cases, Members of Council were elected solely on the ground of individual ability, but unfortunately the Institute appears to be now rapidly arriving at that stage in the history of its constitutional development when party politics threaten to subvene, sacrificing as they necessarily must do the general interests of the Institute for party issues, or for one issue alone.

Should this system of party politics become established, it must necessarily mean that members of the Institute will be represented on Council simply by groups of tacticians, pledged to follow a leader, vote like sheep, and generally conduct themselves with that virtuous obedience and commendable lack of intelligence that is so conspicuously the attitude of the professional politician.

I would suggest to all those members of the Institute to whom are addressed forms of guidance for the election of members *en bloc*, that they at once destroy them, make their own selection, and base it, not upon any particular issue, but on the merit of the candidate to whom they feel can best be entrusted the settlement of any and every question involved in the advancement of the profession.

S. D. Adshead.

[This matter is referred to on p. 632.—Ed.]

The Housing Bil.

Sir,—If we were not dealing with a problem of vital importance, the Government's "Housing, &c. (No. 2) Bill" might be classed as a practical joke. Before we enjoy the joke part of it, I need only remind you that the Treasury is a niggardly body that knows nothing about houses, and that has always so far insisted, to the best of its ability, on the minimum being the standard size of any house in which it is interested.

The joke is contained in these two extracts:—

1. From the Ministry of Health's pamphlet, entitled "How to Get a House of Your Own," dated 1920: (to secure the Grant to Private Persons) "the house must be of a certain minimum size necessary to secure the health and comfort of the occupants. . . . the houses eligible are divided into three classes, the Grant varying accordingly: (1) Accommodation—two living rooms and three or four bedrooms; size—not less than 920 feet super of floor space. (2) Accommodation—one living room and three bedrooms; size—not less than 780 feet super of floor-space. (3) Accommodation—one living room and two bedrooms; size—not less than 700 feet super of floor space."

2. From the Housing, &c., (No. 2) Bill, just issued:—

"The houses in respect of which contributions may be given under this section shall be either—(*a*) a two-storied house with a minimum of 620 and a maximum of 850 superficial feet; or (*b*) a flat or a one-storied house with a minimum of 550 and a maximum of 780 superficial feet."

The idea seems to be that when it is politically expedient to lower the standard far below what is admittedly "necessary to secure the health and comfort of the occupants," you appoint a committee to prove that it can be done. Of course, it can be done. I am myself capable of designing a parlour house, even within the 620 feet limit. There would be room in the cosy parlour for two chairs, and the snug living room could contain either a table or a dresser on the principle of "sweet or cheese."

Manning Robertson
(Late Deputy Chief Architect, Ministry of Health, Housing Dept.).

"Brightening" Trafalgar-square.

Sir,—Last week's *Builder* refers to improvements in Trafalgar-square as proposed by one of your contemporaries.

For many years past I have endeavoured to raise sufficient artistic energy on the part of the respective Governments of the day, and of the public, to make Trafalgar-square respond to its reputation as the "finest site in Europe."

My present idea is shown by the perspective view herewith transmitted, which I hope you will be able to publish. The main proposals are:

1. To remove the present steps at the north-east and north-west angles, throw the spaces into the square itself, and form a fine flight of steps in the centre of the square directly opposite to the portico of the National Gallery and leading up to the terrace; upon the piers of this staircase to fix statuary commemorating the naval work of the great war, and on the sides of the walls of the new flight of steps to fix bronze bas-reliefs—similar to those on the Nelson Column—representing the actions of individual naval gallantry in the sixteenth, seventeenth, and eighteenth centuries.

2. To remove the two present fountains and bring from Piccadilly-circus that splendid bronze fountain designed by Alfred Gilbert, R.A., and fix it in the centre of the square opposite the new steps. This would secure the water display which Gilbert designed. Piccadilly-circus could then be left as an open space. The statue of Gordon to be removed and placed on the vacant pedestal at the north-west corner of the square.

3. To remove the present gloomy asphalted paving, and substitute rich brown-coloured tile paving similar to that along the sea-front of Ostend, or like the paving in the square of St. Mark at Venice.

4. To plant banks of brilliant flowering shrubs, as suggested by Mr. Basil Holmes, the Secretary to the Metropolitan Public Gardens Association, and to place seats all round the north, east, and west sides of the square. To remove the present raking low walls on the east and west sides of the square and erect iron railings stepped, as shown, between piers for electric light standards.

The municipality of Paris is now—even with all the French troubles—spending millions sterling on public improvements in that city; thereby further pleasing and encouraging visitors and giving plenty of work to the unemployed.

It is not to be expected that the present Government will provide funds for carrying out the suggested improvements; but perhaps the general public, or some wealthy persons will come forward and contribute to the scheme, which might be converted into a war memorial to the navy; which would give us a brighter Trafalgar-square, and which would secure the employment of many building craftsmen and sculptors.

Wm. Woodward, F.R.I.B.A., F.S.I.
Bedford-row, W.C.1.

[A letter on "Water Fittings" appears on page 675.]

Statues in Albert-square, Manchester.

We have received a letter from Mr. T. Sington, of Manchester, on the subject of the proposal to remove the statues in Albert-square, Manchester. In the course of his letter, he says: Readers may be interested to learn that, at the City Council meeting, on the 11th, the Manchester vandals, who proposed to remove the whole of the statues in Albert-square, fronting the Manchester Town Hall, suffered a crushing and well-merited defeat. The group of statues fronting the town hall are equal to those in any other English town and are of the best that British art of the time could produce. We had, as a matter of fact, no artists who could have produced anything better. The proposed vandalism involved the idea, that a public man, who has served the community, either nationally or locally, may be honoured by the erection of a statue placed on a prominent site, and that within a few decades his memory may be insulted by its removal to any odd corner which may happen to be vacant. Obviously, such a precedent would have been intolerable; fortunately, common sense carried the day. Another site will be found for the proposed war memorial, towards the cost of which an apathetic and indifferent public tardily found less than half the amount, after repeated appeals; the bulk of the fund was contributed by thirty-three persons out of 750,000.

Exhibition at University College.

The Flaxman Gallery at University College, Gower-street, has recently been redecorated at a cost of £1,600.

The redecoration scheme was prepared by Professor F. M Simpson in co-operation with the Slade Professor, Mr. Henry Tonks, while a new and effective scheme of concealed electric lighting has been introduced in the dome by Mr. Clinton, the Assistant Professor of Electrical Engineering. Mr. Tonks has designed and carried out a painting representing Lord Brougham, Jeremy Bentham, Thomas Campbell, and Henry Crabb Robinson, four of the founders of the college, receiving the plans of the building from William Wilkins, the architect. This painting has been fixed in the central panel under the dome, and it is proposed at a later date to add companion pictures in the panel on either side. A large number of drawings by Flaxman have been obtained, and include between four hundred and five hundred works of great diversity of subject.

Sudbury Hospital's New Wing.

The new wing to St. Leonard's Hospital, Sudbury (Suffolk) was opened on Thursday last week by Sir Courtenay Warner, C.B., M.P., Lord-Lieutenant of Suffolk. The plans were prepared by Mr. Paul Waterhouse, M.A., F.S.A., President R.I.B.A., and building operations were carried out by Messrs. Wakelin & Rampling. The new wing comprises a new operating theatre, X-ray room, bathrooms, kitchens, &c., and generally improved accommodation. To carry out the full scheme, which includes the provision of a children's ward, as recommended by Mr. Waterhouse, a further sum of £2,000 is required, and for this a special appeal is being made.

THE ORIGIN OF THE ADAM FESTOON.

By MILLER CHRISTY, F.L.S.

Everyone is familiar with the extremely light and graceful festoon, looped up at either end, which was used so largely for decorative purposes by the brothers Robert and James Adam. It forms a characteristic feature of their work, appearing almost invariably in their friezes, ceilings, overmantels, and the like. Examples are to be found everywhere in houses designed and erected by them—in Edinburgh, in London (especially in Bloomsbury and the Adelphi), and in many fine country houses scattered throughout England. Similar festoons were used also by their followers.

Fig. 1.—Adam Festoon, with Pendants (from "Works in Architecture," by R. & J. Adam, 1773).

So far as I know, it has never occurred to anyone to inquire what particular species of plant it may have been which suggested to the brothers this peculiarly effective and highly decorative design. Yet it is, I think, difficult to imagine how any inquirer who is able to lay claim to any sort of botanical knowledge could fail to identify the species in question; for it is an abundant denizen of our own country: not a native of Egypt, Greece, or Italy, like the lotus, the acanthus, and most other plants which have been introduced freely into architectural decoration. It is, indeed, no other than the Common (or White) Bryony (*Bryonia dioica*), a climbing plant which is abundant in our English woods and hedgerows from June to September. This plant must not be confused with the so-called Black Bryony (*Tamus communis*), another common climbing plant which grows abundantly in our hedgerows. The two belong, notwithstanding their name, to widely different botanical orders. The heavy-looking, dark-green, glossy, cordate-hastate leaves of the Black Bryony are almost unmistakable, and neither they nor its flowers bear any resemblance to those of the Common Bryony.

The Adam festoon (as one may call it) is seen very characteristically in the accompanying illustration (Fig. 1), reproduced from the handsome volume published by the two brothers in 1773 ("Works in Architecture," vol. I, pt. 1, plate viii). This particular form of the festoon was designed by them to decorate the top of a mirror forming the back of a commode-table. It is here shown caught up at several points, with its ends hanging down loosely, as it was often used by them. The Adam festoon is to be seen again, even more typically, in Fig. 2, which shows part of a very simple and elegant ceiling decoration still existing in a house built by the Adam brothers in Robert-street, Adelphi.

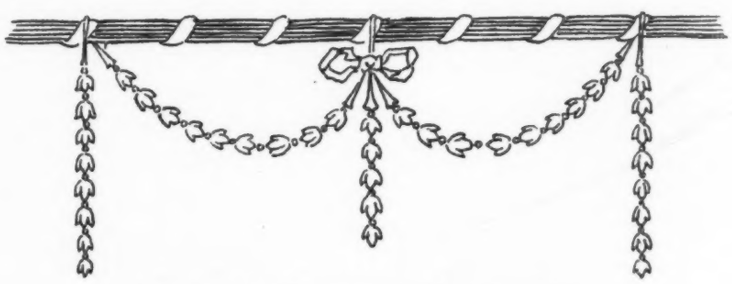


Fig. 2.—Adam Festoon, with Pendants (from a ceiling in a house in Robert-street, Adelphi).

Used on a table-back, or on a frieze, or on any other object, the flat surface of which is in the vertical plane, the Adam festoon is seen in its best and most appropriate form; because, when so used, it is represented as hanging down naturally. One is obliged to admit that the brothers showed some lack of discrimination when they used the festoon (as they did very frequently) on a ceiling, the surface of which is in the horizontal plane. There is obvious incongruity in using this or any other festoon in a position in which it cannot be represented as hanging naturally.

The use of hanging festoons in decorative work, whether painted or carved, is very ancient, extending back to Classic times, when such festoons were used commonly on friezes, on the sides of ornamented bowls, altars, and sarcophagi, and in similar situations. The kind of festoon in use at this early period was, however, of the heavy, solid, and comparatively-ungainly type often called a "swag" (Fig. 3). It was composite in its nature; being made up of flowers, fruit, and foliage, all tied together. Obviously the use of such festoons was suggested originally by the primeval custom of hanging up bunches of fruits, vegetables, herbs, and the like to dry in the sun for future domestic use.

But the Adam festoon had distinctive features of its own which had not been used previously, or not used generally. In the first place, it is obviously simple: not composite. It is composed almost wholly of foliage: not of flowers, vegetables, or fruit. It is always slender, light, graceful, and of equal thickness throughout, thus differing widely from the earlier "swag."

That all the distinctive features of the Adam festoon might have been, and probably were, derived from the natural festoons of the Common Bryony, as suggested already, seems practically certain. No other plant that I know (certainly no British plant) produces naturally such elegant and graceful festoons, reminding one almost inevitably of the Adam festoon. Moreover, the ends of the growing shoots of the Bryony—those shoots the tendrils of which fail to catch on to some neighbouring twig—hang downwards loosely, thus forming pendants; and these natural pendants closely resemble the conventional end-pendants of the Adam festoon, as shown above. Another point of resemblance is to be found in the fact that the Adam festoon (unlike the early "swag") seldom or never displays flowers in its composition, and that the flowers of the Common Bryony are greenish-white in colour and very small and inconspicuous.

I do not contend for a moment that the brothers Adam took a growing shoot of the Bryony and reproduced it in its natural form on their friezes, ceilings, and the like. Obviously they did nothing of the kind. What they did, apparently, was to use a length of the stem of the plant in a form which was largely conventionalised and much better suited for a purely decorative purpose than the natural form. Thus the leaves of the Bryony, though highly decorative in themselves, were probably thought too large and straggling for this special purpose, so were discarded entirely. Their place was supplied by a number of small bract-like scales, set closely together and overlapping one another, exactly as in the catkins of many trees. The catkins copied may have been those of the hazel, poplar, hornbeam, or other familiar tree. Moreover, even if the catkin of one or other of

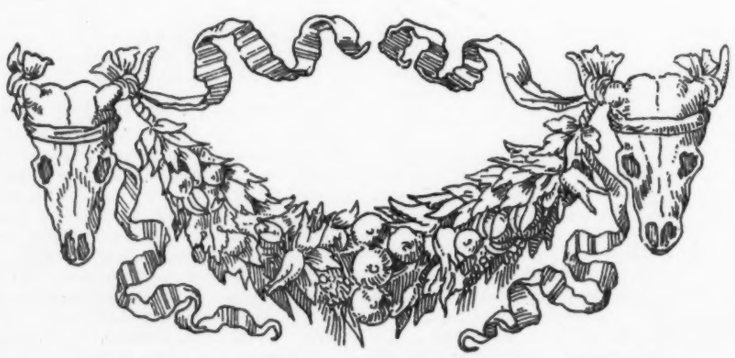


Fig. 3.—Ordinary Type of made-up Classical "Swag."

these trees really did suggest to the brothers Adam the leafage of their characteristic festoon, it is certain that no one of these trees could have suggested, either to them or to anyone else, the idea of a festoon, for no part of any of them forms naturally a festoon of any kind. Some years ago, the late Mr. Lewis F. Day suggested ("Nature in Ornament," II, p. 60, 1909) that the catkin copied was that of the male flower of the Californian plant *Garrya elliptica*, well known in our gardens. The resemblance is certainly very close, but is quite accidental. Mr. Day forgot, or did not know, that the plant in question was not discovered till 1828, when both the brothers Adam had been dead many years, and that it did not flower in this country till 1834.

There seems, therefore, no reasonable doubt that the natural festoons of the Common Bryony really did suggest to the brothers Adam the main idea for their characteristic festoon, even although they derived certain details of it from some very different plant. Those who wish to dispute this contention should at least call attention to some other plant forming natural festoons which has a closer general resemblance to the Adam festoon.

Of all our English climbing plants none is more perfectly adapted to its end than the Bryony. It is able to ascend easily to a considerable height—often fifteen or twenty feet; its long slender spiral tendrils are exceedingly skilful in seizing upon every available means of support—even the smallest twig or leaflet; and it succeeds in carrying its slender stems across surprisingly-wide intervals between the tips of the branches of any bush it climbs over, thus forming the festoons in question. A stretch of two feet

Fig. 4.—Natural Festoon of Common Bryony (about 2 ft. 6 ins. wide).

or two feet six inches between supports is common. All the three festoons shown in the two accompanying photographs (Figs. 4

Fig. 5.—Two Natural Festoons of Common Bryony.

and 5, the latter showing two festoons) are approximately of this width. Sometimes, however, the stretch is much wider—so much

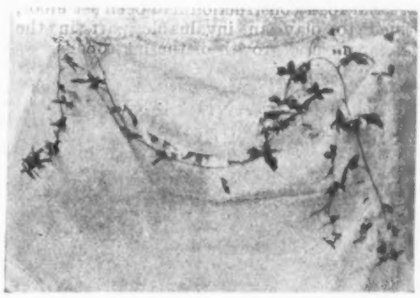


Fig. 6.—Natural Festoon of Common Bryony (3 ft. 9 ins. wide), with End Pendants.

wider that one wonders how the plant contrived to reach across the interval. The next photograph (Fig. 6) shows a festoon I have recently photographed, in which the distance between the two supports at either end is as much as three feet nine inches; but, in this case, the festoon is formed of two growing shoots which have joined hands (so to speak) in the middle. In such cases one can only suggest that the wind, by swaying some pendant end or ends, must have helped the plant to bridge the gap, just as it does in the case of the spider and its web. This photograph shows also the same plant as Fig. 4, but taken at a later date, when it had developed pendants at each end of the festoon.

Altogether, the Common Bryony is an exceptionally graceful and interesting plant. That the brothers Adam should have perceived its decorative value and have turned it to account (as I contend they did) is strong testimony to their artistic genius and perception.

EXHIBITION NOTES.

MR. WILLIAM WALCOT'S DRAWINGS.

There has probably never been an Exhibition of the same distinctive and individual charm as that of Mr. Wm. Walcot's drawings now on view at the R.I.B.A. The effect of these beautiful drawings is very striking and brilliant. They are brilliant without being gaudy or vulgar, and they are impressive without any lack of refinement. We suppose this is the most notable example in this country of a carefully-studied attempt to visualise the original polychromatic effects of Greek buildings, and, though a large number of drawings are shown, there is no sense of monotony or lack of interest. We can understand some lack of appreciation of the archaic Temple of Diana at Ephesus amongst a sturdy and reserved people of northern climes who may look askance at the alternating green and red volutes and the theatrical display in the drawing, but who can deny the sheer beauty of colour in the "Seventh and Last Wooden Archaic Temple of Diana," or the magnificent colour effect in "An Assyrian Temple"? The dignity of the Acropolis after the Roman restoration is set forth with the most delicate charm of colour in one of Mr. Walcot's exhibits, and the drawing is a curious contrast to the richness and vigour of "A Babylonian Temple" or "The Trojan House." Full as is the realisation of delicate detail and varied lights and shades, the artist never fails to give us an overmastering sense of size and dignity. Besides the colour work we are enabled to study the work of Mr. Walcot as an etcher in the Institute Galleries, and here, again, we may compare his charming little views of buildings and scenes in England and America with his large, forcible studies of ancient buildings, so that one is greatly impressed with the versatility and imaginative thought which make his pictures so vivid and appealing. In the delineation of modern architecture this able artist has often enough disappointed us, but it was a disappointment which always had its compensation; one may have missed something architectural but got instead some valuable "Walcot." Such an artist might be a dangerous guide, but if he inspires another artist to be himself he has done a great service. He has, like all of us, the defects of his good qualities, but the present Exhibition can leave none in doubt as to his unique and outstanding ability.

FIRST INTERNATIONAL EXHIBITION OF WATER-COLOURS.

This exhibition, which opened at Milan in the Palazzo della Permenente recently, makes a new and very interesting departure in the development of modern Italian art. Hitherto, it may be considered that water-colour in Italy, although it has attained very high success in the hands of individual artists such as Paolo Sala, Onerato Carlandi, Nardi, and others, has taken—and perhaps still takes—quite a secondary position to that of oil painting and is even still considered by many as a more or less amateur display. The aim of this exhibition is to develop this branch of art in Italy into something which on its own lines can hold an equal place beside oil or fresco painting; for there can be no doubt that with water-colour if properly handled results can be obtained both in figure and landscape work of incomparable beauty.

The British Section has a fine room to itself on the first floor, and has met with enthusiastic approval of Italian critics. The place of honour on the centre wall is occupied by the fine drawing of "Le Pui, France," by Sir H. Hughes Stanton, R.A., P.R.W.S., who is the President of the British Section; while on the two side walls the central places are taken by the "Bull Fight," by the Vice-President (W. Russell Flint, A.R.W.S.) and the fine marine painting by Hely Smith, R.B.A. Around these are grouped the drawings sent by H. S. Tuke, R.A., George Clausen, R.A., F. Spenlove Spenlove, Cecil Hunt, Percy Lancaster, Anna Airy, Bridget Kier, Eva Savory, Selwyn Brinton, A. T. Nowell, and others; and it may be noted that the works of Reginald Smith, William T. Wood ("Twilight and Silence"), Thorne Waite ("The Hay Makers") and Moffat Lindner, have aroused special interest among Italian visitors.

THE WOMEN'S EXHIBITION.

That the standard of accomplishment in exhibitions is being constantly raised is evidenced by the Women's Exhibition at Olympia. It would be difficult to imagine anything more delightful in its way than the garden section, in which spring flowers are admirably displayed round and about the Tennis Court by W. H. Gaze & Sons. Flowers, sweets, scents and dainty dress are, of course, largely in evidence everywhere, and if the stall designs were really good the whole effect would be most excellent, but the average stall design is still very fussy and inane. There is a good deal of the practical and utilitarian to be seen, but it is pleasantly relieved by such fine exhibits as that by Waring & Gillow, garden shows like that of the Aldersley College and Gaze & Sons, or the admirable work of the Royal School of Needlework. The large number of oils, water-colours and black-and-white in the Women's Fine Art Academy make a really interesting collection, and one is glad to feel that so much good colour-sense is to be found amongst it, as for instance in Nos. 312, 34 and 149. The charming little etching (No. 352) and other excellent pictures, such as Nos. 257, 35, 390 and 434, are the sort of things which make the exhibition worth seeing; there is a large amount of capable work produced by this Academy.

MEETINGS OF SOCIETIES.

THE LONDON SOCIETY.

At a meeting of the London Society, held on Friday last week, Mr. C. H. Bressey, O.B.E., F.S.I., read a paper on "London's New Trunk Roads in the Making."

In the course of his paper, Mr. Bressey said the works of road construction which have been carried out in Greater London since the autumn of 1920 had cost a very large sum. A report of the Middlesex County Council, in November last, put the outlay in that county alone at £1,381,753 for six schemes only. True, the Greater London projects had provided employment for more than 30,000 of their workless brethren, but now that the black cloud of unemployment showed signs of lifting he could imagine that criticism of the expenditure would not be wanting. By all means let the critics have full scope, but let them remember that the new highways which were now at last taking shape had been earnestly advocated and eagerly waited for some generations past. To those who reproached the road engineers of to-day with excessive zeal, he would be inclined to retort that censure might more justly be passed upon the inaction of their predecessors. Their expenditure of to-day redeemed the arrears accumulated during the long period of neglect. To look back no farther than the year 1896, when self-propelled vehicles invaded the streets, what great new thoroughfares could they point to that had been created in the interim to accommodate the new forms of transport? The general traffic census taken last August showed that on many of the trunk roads the proportion of mechanically propelled vehicles was as high as 98 per cent. How their number was swelling might be gauged from the estimate of the mechanically propelled vehicles registered in the London County Council areas, *i.e.*, about 91,000 in the year 1921, and 104,000 in 1922, an increase of 14 per cent. in twelve months. Moreover, even if traffic conditions had not been revolutionised, they would recall that the population of Greater London, in 1921, was 7½ millions—certainly a million higher than in 1896.

No one would venture to say that there had been any development of the highway system commensurate with that growth and the concurrent spread of the travelling habit. On the contrary, extending one's views into the more distant past, it might even be argued that road communications had definitely deteriorated, owing to the numberless obstructions caused by canal bridges, railway level crossings, swing bridges in dock areas, &c. Recognising the utter disparity between traffic needs and traffic facilities, Mr. John Burns, the then President of the Local Government Board, convened the Arterial Road Conferences of 1912 to 1916, when representatives of the Local Government Authorities of London met to devise plans for the future. Their findings represented the verdict of the metropolis in its widest sense, but the outbreak of war and the lack of funds precluded any action. The maps and recommendations framed at the Conferences passed into the keeping of the Ministry of Transport created in 1919, and when in the autumn of 1920 unemployment became acute, the Government, acting upon Sir Henry Maybury's advice, offered to participate with the local authorities on equal terms in the carrying out of the schemes which, needless to say, called for considerable revision as a result of building developments which had occurred in the meantime. It was indeed a case of now or never. In some instances the foundations of houses were being laid, clean athwart the line proposed for a new arterial road. Another few weeks and the way would have been barred. Friendly negotiations led to the acceptance of the Ministry's terms by the County Councils of London, Middlesex, Essex, Kent, Hertfordshire and Surrey, not to mention certain county boroughs and minor authorities, the outcome being that an extensive programme of arterial road construction had been set afoot, destined to play an invaluable part in the development and growth of the metropolis.

ARCHITECTS' AND SURVEYORS' ASSISTANTS' PROFESSIONAL UNION.

Economies in Concrete.

Mr. E. Fiander Etchells (President of the Institution of Structural Engineers) gave an interesting and useful address before the last meeting of the Metropolitan Branch of the Architects' and Surveyors' Assistants' Professional Union on the uses of concrete in building construction. Mr. Maurice E. Webb, F.R.I.B.A., occupied the chair.

In pointing out the economies which can be effected by taking advantage of the improved quality of good brands of modern cement, the lecturer said that there was a tendency among architects to ignore these improvements and draw up specifications as though they were dealing with cement and concrete of thirty years ago. He pointed out the fallacy of "aerating" cement before use by spreading it over a large area in sheds, as is still commonly done, in spite of the fact that instead of improving the cement, such a proceeding does nothing but harm. He mentioned that although some foreign cements are not properly aerated, all the well-known British cements should be used exactly as received from the makers.

Turning to the question of aggregates (and illustrating his remarks by demonstrations) the lecturer said architects often specified one type of aggregate and accepted another without knowing it. He showed that the presence of free lime in aggregate could be detected by dropping a sample in a glass of water containing hydrochloric acid—if free lime were present there would be a "sizzling" sound as soon as it came in contact with the water.

On the subject of fire-resistance, he showed samples of coal-residue aggregates, and emphasised the fact that only those which had been thoroughly burned should be used for concrete. The fire-resistance of what is known as "granite" concrete was shown by a specimen which had been exposed to an oxy-acetylene flame for twenty minutes, with the result that the concrete, far from being adversely affected, was even harder than before being subjected to fire, which had simply burned a slight groove about a quarter-of-an-inch deep in it.

The important question of producing impervious concrete was dealt with at some length, and it was pointed out that the best method of making a watertight concrete was to proportion the cement, sand and coarse material so that there were no voids left through which water could percolate. The method of ascertaining the correct proportions to obtain the best results was demonstrated, as follows:—A sample of the coarse aggregate to be used is put into a vessel of known capacity, and water is then poured in until the aggregate is just covered, and the water is then drained off and measured; thus, if the aggregate is reckoned as 100 parts, and 40 parts of water are required to cover it, it is known that 40 per cent. of sand will be required to fill the voids in the coarse material. A sample of sand is then treated in the same way in order to find the quantity of cement wanted to fill all the voids in the sand. In addition, there must be enough water to damp the coarse material and sand, and this can easily be found by covering a known quantity of aggregate with a known quantity of water and then draining the water off—the difference between the quantity of water poured on to the aggregate and the quantity recovered is the amount required to damp the materials. The lecturer here pointed out how cement was wasted by working by rule-of-thumb and simply specifying that the concrete shall be a 4:2:1 or similar mixture. He expressed the opinion that specifications of the future might not be by hard and fast proportions of ballast, sand and cement, but that there shall be enough sand to fill the voids in the ballast, and enough cement to fill the voids in the sand. The percentage of cement paste was one of the exact measures of the quality of a concrete, and in all tests architects should ask for information as to the ratio of the volume of cement paste to the volume of the finished concrete.

In regard to the water content, he gave some striking figures of the effect of haphazard workmanship. The operative likes to use plenty of water because a sloppy mix is easy to handle, but it is probable that there would be more careful supervision and better concrete produced if the fact stated by the lecturer, that 2 per cent. more water than the correct amount for any given mix will reduce the strength by 20 per cent., and an excess of water of 5 per cent. will reduce the strength by 30 per cent., were better known. As Mr. Etchells put it, "You pay for water to reduce the strength of your building—which is not true economy or even common sense." There is an exact proportion of water which produces the best concrete, and amounts above or below that critical quantity weaken the strength to an extent unrealised by anyone except those who closely follow modern research in this direction.

In some further remarks on this subject, the lecturer showed that any excess of sand above that shown by the simple test to be the correct amount did not increase the strength of the concrete in any appreciable degree, and to specify any more was simply to throw money away.

As a ready means of testing the water content of cement he demonstrated that a ball of cement of the right consistency, if allowed to fall from a height of, say, 20 in. would be slightly flattened where it came in contact with the floor or table.

In a few remarks on reinforcement, the lecturer emphasised the necessity for hooking the ends of all reinforcing bars.

In a short discussion which followed the address, Mr. Webb pointed out that cracking caused by the expansion and contraction of concrete in floors and roofs could be overcome by the insertion of strips of wood when the concrete was placed, so that they could be withdrawn after it had set. For concrete roofs he advocated a covering of asphalte in order to make them watertight.

In reply, the lecturer agreed that it was always advisable to form expansion joints in floors and roofs by inserting boards when the concrete was poured, and in regard to making concrete roofs watertight, his advice was not to trouble to make the concrete absolutely watertight, but to cover it with asphalte or a similar covering.

A hearty vote of thanks, proposed by Mr. McLachlan and seconded by Mr. Gould, was passed to the lecturer.

THE ROYAL ARCHÆOLOGICAL INSTITUTE.

Old Parish Churches.

At a meeting of the Royal Archæological Institute, held in the apartments of the Society of Antiquaries, Burlington House, Piccadilly, W., on Wednesday last week, Mr. Aymer Vallance, M.A., F.S.A., gave a lecture on "The Tour of an Old Parish Church," in which he briefly described the ceremony, or usage, which indicated the reason for the existence of the objects of interest pointed out, some of which were the churchyard, or palm, cross, which was the end of the first stage in the procession on Palm Sunday. In Kent, only two of the crosses remained, probably owing to the lack of stone in that county; whereas, Somerset, rich in stone, was also rich in crosses. The edifice was so placed that there should be no obstruction for the parochial procession in

making the circuit of the church, and buildings erected near had to allow for a "processional way" through them. Such an example was to be found at Ewelme, Oxon, where an almshouse, built in 1347, near the church, had a covered way for use in wet weather, each side of which was pierced with openings for this purpose. The porch appeared to have no definite use, although sometimes the first part of services were conducted there, and it was the recognised place for teaching and for fulfilling contracts and holding inquests in case of sudden death. Fixed seats began to be provided towards the close of the thirteenth century. The most prominent object in every church was the great rood. Edward VI ordered their removal; they were revived by Mary, and again destroyed by Elizabeth. In order to prevent halation from the east window, the top part of the chancel arch was blocked with a tympanum, which existed till the nineteenth century, and in order to throw a full flood of light on the rood a window was provided on the south side of the nave. The rood being the central object in the church, the roof immediately overhead was given special decorative treatment. In the fifteenth century the rood was surmounted by a rood loft for the singers and musicians, reached by a rood turret, which were demolished by the Puritans, who aimed at stopping musical services.

WHITGIFT HOSPITAL.

The second reading of the Croydon Corporation Bill, which involves the demolition of Whitgift Hospital, was taken in the House of Lords on Wednesday. Lord Crawford and Balcarres moved the following :—"That it be an instruction to the Committee on the Croydon Corporation Bill to strike out of the Bill all powers relating to the compulsory acquisition of the Hospital of the Holy Trinity, otherwise known as Whitgift Hospital, in Croydon, with its Chapel and Offices." This was agreed to.

In support of Lord Crawford's motion, the following statement has been issued on behalf of the Royal Academy, the Royal Institute of British Architects, the National Trust for Places of Historic Interest or Natural Beauty, the Society of Antiquaries of London, the Royal Society of Arts, the Town-Planning Institute, the Society for the Protection of Ancient Buildings, the British Archæological Association, the Royal Society of British Artists, the Commons and Footpaths Preservation Society, the Civic Arts Association, the Surrey Archæological Society, the London Society, the London Survey Committee, the London and Middlesex Archæological Society, the Croydon Natural History and Scientific Society, the R.I.B.A. Town-Planning Committee, the South Eastern Union of Scientific Societies and the West Surrey Society :—

1. The primary object of the Bill is to enable the Mayor, Aldermen and Burgesses of the County Borough of Croydon to acquire compulsorily and to demolish the famous group of buildings known as the Whitgift Hospital or College in connection with a scheme for widening North End, Croydon.

2. The Whitgift Hospital was founded in 1596 by John Whitgift, Archbishop of Canterbury, and ever since its completion in 1599 it has furnished homes for aged men and women. The buildings are grouped around a grassy quadrangle and garden and contain accommodation for the chosen inmates and a beautiful Chapel which was consecrated by the then Bishops of London and Chichester in 1599 and has since been regularly used for Divine Worship.

3. The Hospital affords the only example of Elizabethan buildings now remaining in the neighbourhood, and it is the most beautiful architectural feature of the town of Croydon. Very few colleges of a similar age and type or of equal importance have survived in England, and it is the unanimous opinion of the foremost experts of the day that Whitgift Hospital provides an outstanding illustration of the architectural dignity and charm of the period it represents.

4 Without exception the great learned and artistic Institutions and Societies interested in the preservation of ancient buildings on account of their artistic, antiquarian, architectural, or educational merit have united to urge upon Parliament the desirability of amending the scheme of the Croydon Corporation. If carried out in its present form that scheme will utterly ruin a landmark of exceptional historic interest, and it is widely felt that no public necessity exists for the destruction of the Hospital.

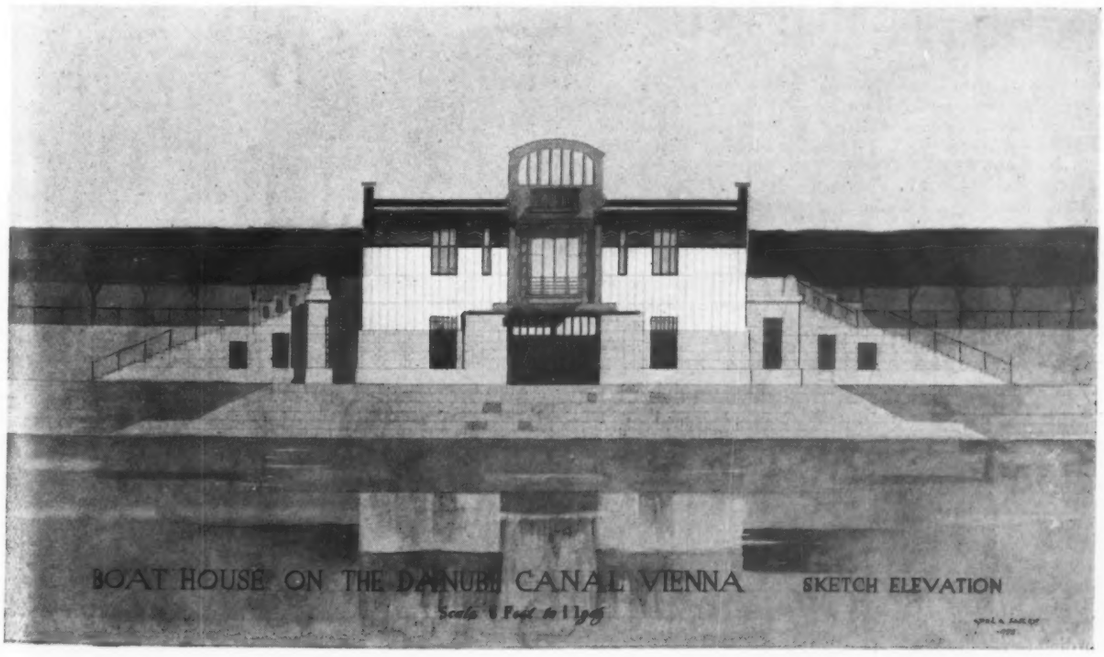
5. North End, Croydon, forms part of the main London to Brighton road and the widening of the thoroughfare is primarily intended to provide improved facilities for the heavy traffic which, admittedly, the road has hitherto had to bear. There is, however, no good reason why North End should not be widened on the western and not on its eastern or Whitgift Hospital side. A widening on the western side would save the Hospital and would materially lessen an awkward bend at the junction of North End with High-street. That bend will not be eliminated by the destruction of the Hospital.

Moreover, in order to get rid of the possibility of the congestion of through traffic, a new main by-pass road from Thornton Heath to Purley is now being constructed under the direction of the Minister of Transport. This new road will be completed within a few months, and it is anticipated that it will so improve the conditions now obtaining in North End as to remove any need for widening and improving that thoroughfare.

6. The practicability of effecting the widening of North End was fully considered by the Local Government Board in 1911 upon an application made by the Corporation for a Provisional Order for powers to acquire the Hospital. That Department declined to proceed with the application unless and until a completed scheme for the widening and improvement of North End had been submitted to it, and it intimated that any such scheme should exclude the acquisition and demolition of the Hospital.

The Corporation in 1912 adopted a scheme complying with these conditions and the Local Government Board thereupon sanctioned a loan. The present scheme of the Corporation completely ignores the conditions of the Local Government Board, which conditions have been repeated by that Board and their successors, the Ministry of Health, in reference to other applications by the Corporation in connection with widening North End.

7. The preservation of Whitgift Hospital is a matter of more than local concern. The buildings are of national interest and their destruction would be regarded as a calamity by the whole of the artistic and antiquarian sections of the community. That North End may be effectively widened—should any widening be necessary—without disturbing the Hospital, has been already fully proved to the satisfaction of the Department of State charged with the duty of considering traffic problems



From a Sketch by Mr. Cyril A. Farey, A.R.I.B.A.

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ILLUSTRATIONS.

Welwyn Garden City.

We illustrate this week some buildings at Welwyn Garden City, an article on which is given on pp. 654–8.

Clive House, Delhi.

These premises have been recently erected in Delhi, on a site near the Burn Bastion, close to the spot where General Nicholson was killed during the Mutiny. The accommodation comprises a motor car showroom on ground floor with three floors of offices over. The foundations had to be taken down to a depth of 18 ft., as the site was "made ground" on the bed of an old canal.

The walls are constructed of brick, with lime plaster on the external face. The floors are carried by rolled steel joists on steel stanchions, the spaces between subsidiary joists being filled with brick arches. The partitions are formed with 4½ in. brickwork reinforced with hoop-iron. The joinery has been made up of teak on ground floor and deodar on upper floors.

The ceilings have been constructed with lime plaster on wire netting on the ground floor and painted black iron sheets on the upper floors The lavatories are water borne and connected with the public sewer.

Owing to the height of the building, the water for the upper floors is pumped by electric pumps in the basement to storage tanks on the roof. Provision has been made for an electric lift adjoining the main staircase.

The building was constructed by the owner, Sherparshad Madan Gopal, with direct labour. All the constructional steelwork was supplied by Messrs. Jessop, of Calcutta. Messrs. Norton, of Delhi, supplied and fitted all lavatories and baths. Messrs. Bird & Co., of Delhi, laid the Indian patent stone floor to the motor showroom. Messrs. Sumair & Co., of Delhi, were responsible for all the wiring for electric lights and fans.

Major B. Matthews, F.R.I.B.A., of Simla, was the architect.

Quarters for Married British Soldiers in the Indian Hill Stations.

Owing to the increase in the number of soldier families in India since the war, the Government of India have embarked on a scheme of providing 500 additional blocks of quarters in the various Indian Hill Stations to afford accommodation for the families during the hot weather.

Each block is double-storied and consists of four quarters. The construction of the buildings vary according to the locality and materials available. In most cases local stone has been utilised for the walls. The majority of roofs are covered with iron sheets, as this is the only material that will successfully withstand the continuous heavy monsoon rains.

The floors are constructed of reinforced concrete, but in some cases wooden joists have been used when difficulties were experienced in obtaining the necessary steel for reinforcement.

The quarters were designed by Major B. Matthews, F.R.I.B.A., consulting architect to the Military Works Services in India.

THE SOCIETY OF ARCHITECTS.

THE Society of Architects' Scholarship for the study of modern architecture abroad will be awarded for the first time this year and will be tenable in the United States of America. The Scholarship is to the value of three hundred pounds, and the winner will be required to spend a period of not less than six months in America and to present upon his return a report which should form an important contribution to contemporary architectural literature. Entrance is open to any British subject between the ages of twenty-five and forty years. Messrs. H. V. Lanchester, F.R.I.B.A., Arthur J. Davis, F.R.I.B.A., L. Sylvester Sullivan, A.R.I.B.A., Lt.-Col. H. P. L. Cart de Lafontaine and Howard M. Robertson, have been appointed to act upon the jury, who will select the holder for the present year.

The Victory Scholarship, which was instituted by the Society several years ago, will be awarded for the third time this year. The Scholarship is to the value of £100 and carries a Gold Medal. Ten final competitors are selected from a large number of candidates who are required to prepare a sketch design, the subject of which is only disclosed at the last minute, at a twelve hours *en loge* sitting.

THE ROYAL SOCIETY OF BRITISH ARTISTS.

THE Royal Society of British Artists celebrated its hundredth anniversary by a dinner held recently in its Suffolk-street Galleries. The President, Mr. Solomon J. Solomon, occupied the chair.

Sir Aston Webb, in proposing "Prosperity to the Society," said that as President of the Royal Academy he conveyed the congratulations, sympathy, and interest of that body to the Society, and offered them any assistance in their power. That had not always been the case. When the Society was formed the Royal Academy rather objected to the presence of another painting society and actually passed a law prohibiting its members from joining it. The Society very naturally retaliated by imposing a fine of £100 on any of its members who joined the Royal Academy. Artists must have been better off in those days, for two of them—Stansfield Clarke and David Roberts—actually paid and left the Society. If that had gone on it would have brought a very considerable sum to the Society, because now it was a natural progression, and after a time their members entered the Royal Academy.

MEETINGS.

FRIDAY, *April* 20.

Town-Planning Institute.—Mr. T. Adams on "Region of New York City." At 92, Victoria-street, S.W.1. 6 p.m.

MONDAY, *April* 23.

Royal Institute of British Architects.—Mr. W. G. Newton on "Literature of Architecture." At 9, Conduit-street, W.1. 8 p.m.

TUESDAY, *April* 24.

Builders' Clerks' Benevolent Institution.—Annual Dinner. At King's Hall, Holborn Restaurant, W.C.1. 6.30 p.m.

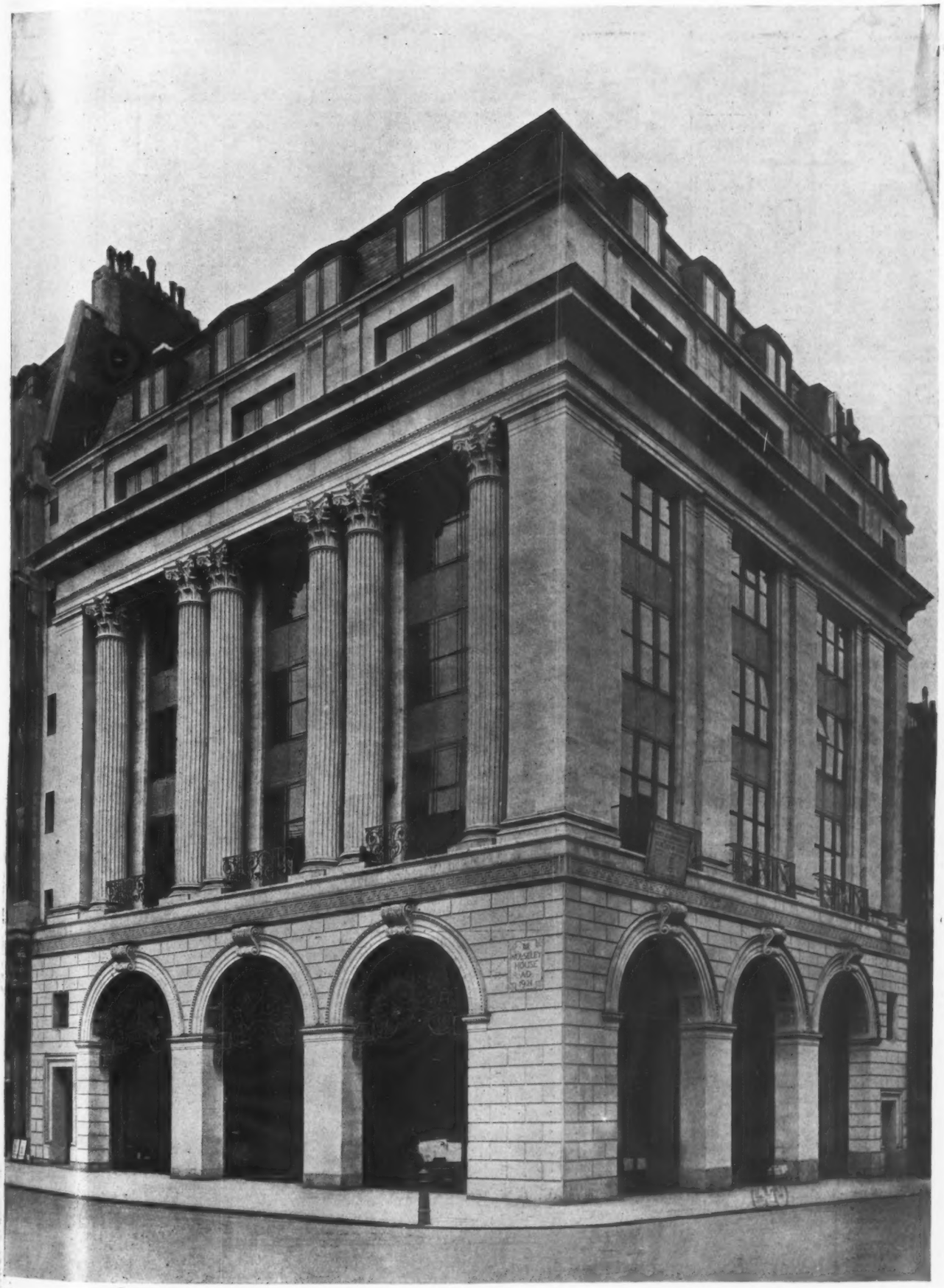
WEDNESDAY, *April* 25.

Liverpool Architectural Society.—Annual General Meeting. At 13, Harrington-street.

New University at Vancouver.

His Majesty's Trade Commissioner at Winnipeg (Mr. L. B. Beale) has furnished a report to the Department of Overseas Trade regarding the building programme which is to be undertaken this year by the Provincial Government of British Columbia in connection with the new University at Vancouver. The sum of 1,500,000 dols. has been voted by the Legislature to complete the existing Science Building (which is a permanent structure) and to erect temporary frame structures to provide accommodation for the remaining departments. The report indicates openings for the supply of heating and kitchen equipment, sanitary appliances and fittings, builders' hardware, fireproof vault doors, lavatory basins, shower baths, &c., quotations for which will be welcomed by the architects in charge of the scheme. United Kingdom firms interested should apply to the Department of Overseas Trade.

Quarters for married British soldiers in the Indian Hill Stations.
MAJOR B. MATTHEWS, F.R.I.B.A., Consulting Architect to the Military Works Services in India.



Wolseley House, Piccadilly, W. Mr. W. Curtis Green, F.R.I.B.A., Architect.
Awarded R.I.B.A. Medal for the best Street Frontage completed in London during 1922.]

NO B 12.

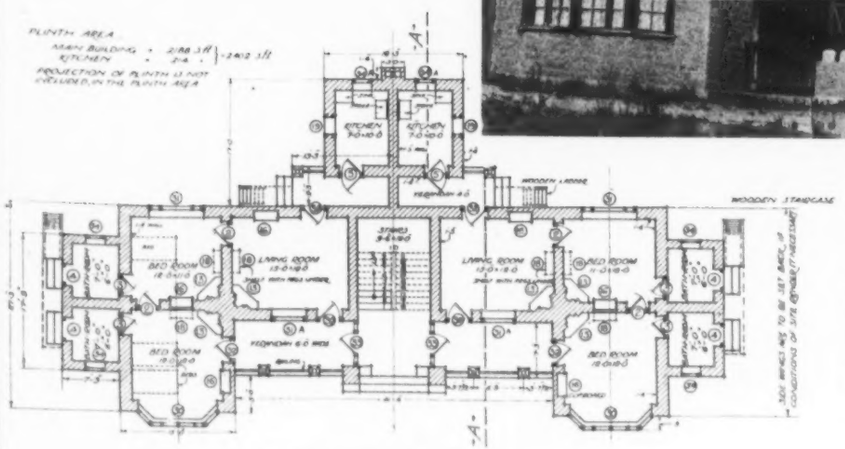
BACK ELEVATION

FRONT ELEVATION

QUARTERS FOR MARRIED SOLDIERS IN THE INDIAN HILLS.

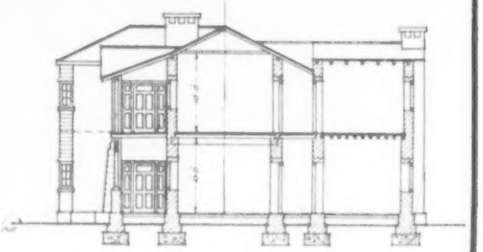
MAJOR B. MATTHEWS, F.R.I.B.A.,
Consulting Architect for
Military Works in India.

(*See p.* 642)



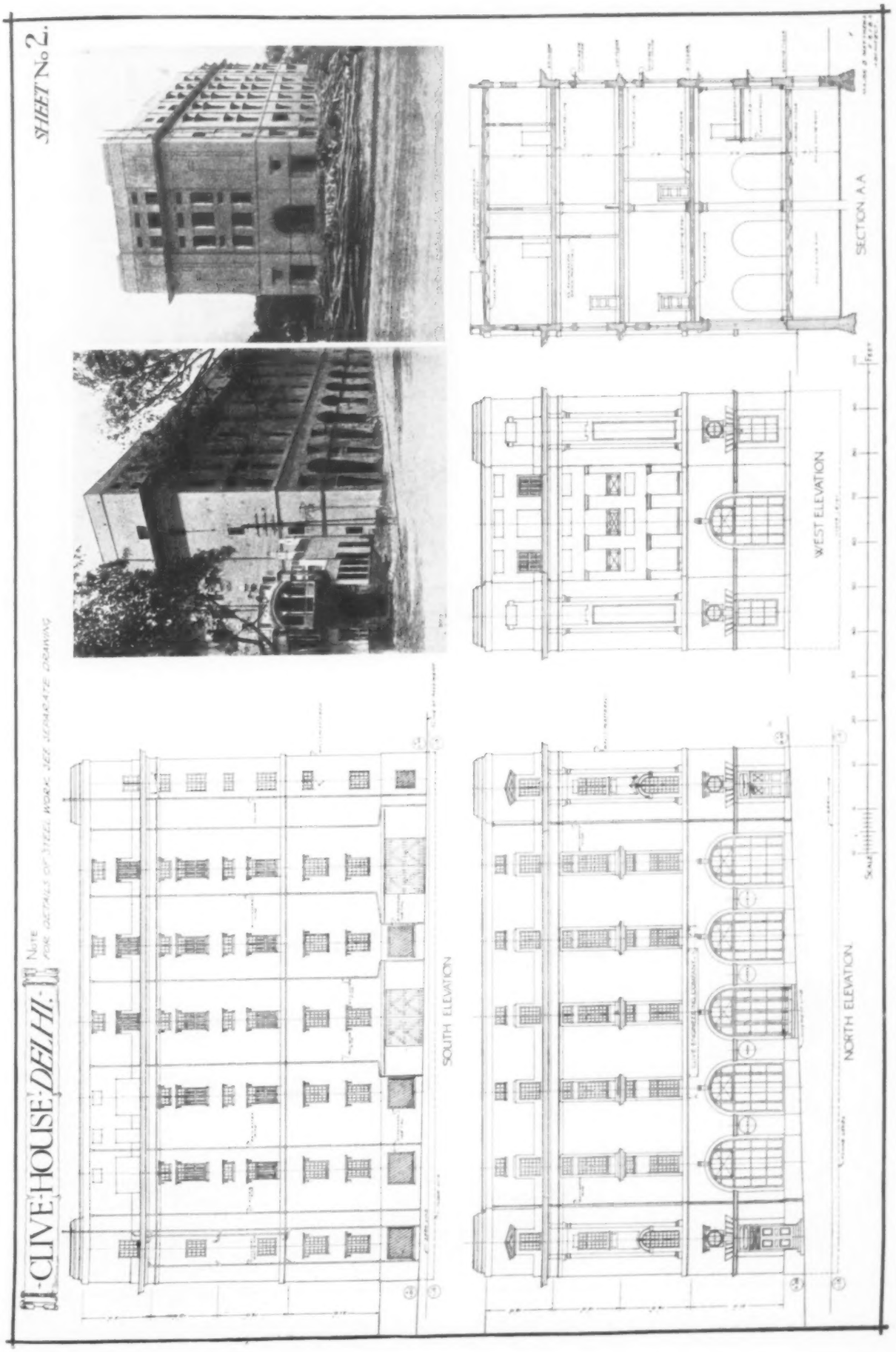
GROUND FLOOR PLAN

NOTE 1.
FOR DOORS TYPES 2,3,4, AND 5 SEE DETAIL SHEET NO 1.
FOR D6 D8 33,38 AND WINDOW 34 D9 10.
FOR WINDOWS 30 AND 31 D10 9
FOR FIRE-PLACE NO 13 D11 4.
FOR WALL CUPBOARD NO 16
FOR SHELF HANGING NO 18 } SEE DETAIL SHEET NO 5.
FOR MEAT SAFE NO 19
WINDOW NO 31 A IS SIMILAR TO NO 31 BUT WITHOUT FIXED SIDE LIGHTS.
WINDOW NO 34 A IS SIMILAR TO NO 34. BUT TO OPEN INWARDS WITH FIXED WIRE GAUZE OUTSIDE.
NOTE 2.
ROOFING AND PAVING MATERIAL TO BE DETERMINED ACCORDING TO LOCAL CONDITIONS.
NOTE 3.
HEIGHT OF PLINTH TO BE FIXED ACCORDING TO LOCAL CONDITIONS.
NOTE 4.
FOR DETAILS OF ENTRANCE & STAIRCASE SEE DETAIL SHEET NO 14.



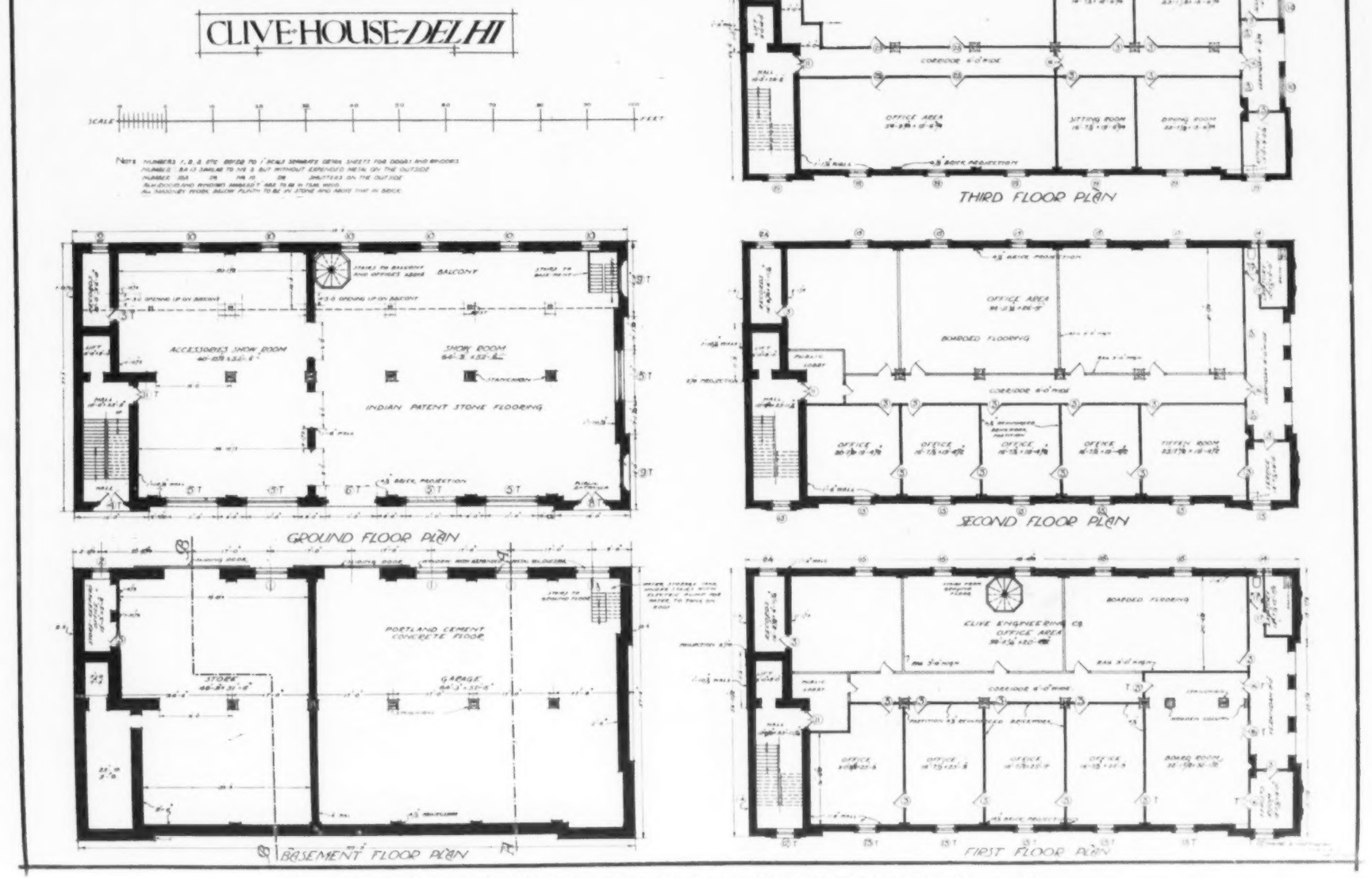
SECTION A-A

SCALE

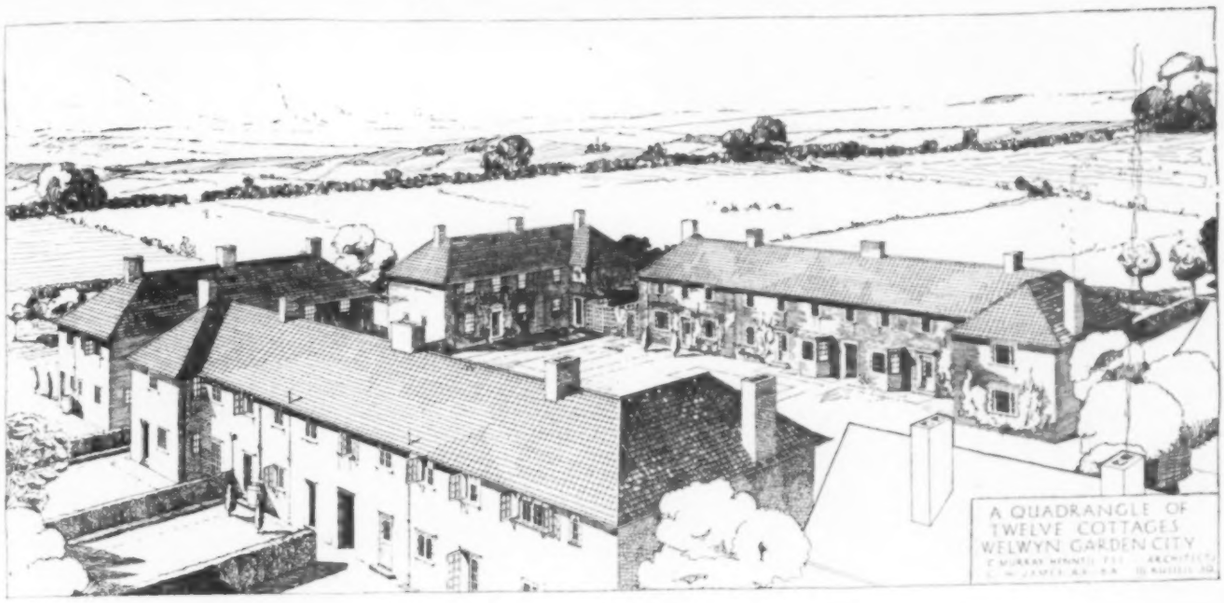


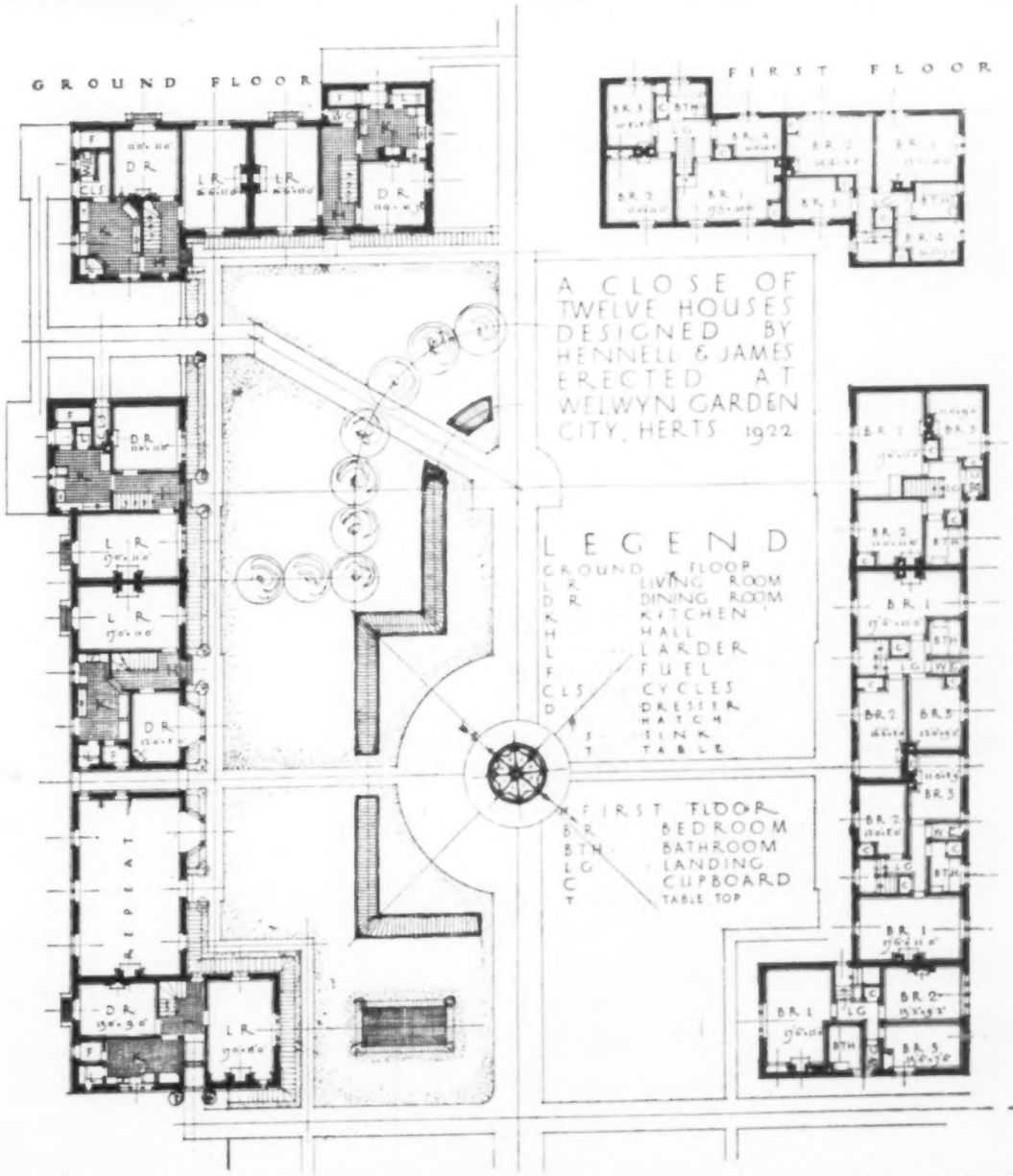
Major E. Matthews, F.R.I.B.A., Consulting Architect for Military Works in India. (See p. 642)

CLIVE HOUSE—DELHI

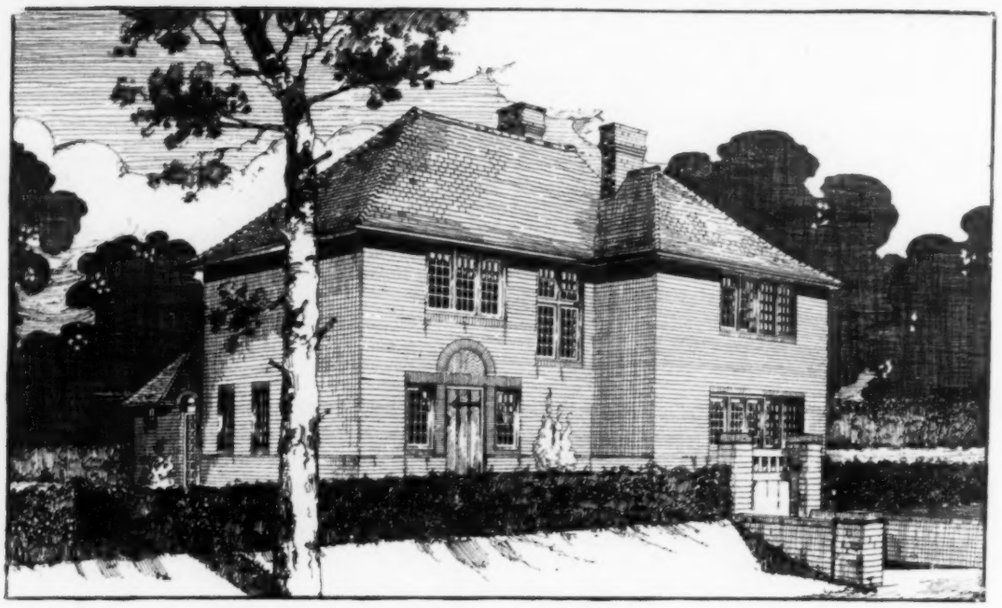


MAJOR B. MATTHEWS, F.R.I.B.A., Consulting Architect for Military Works in India. (*See p.* 642).



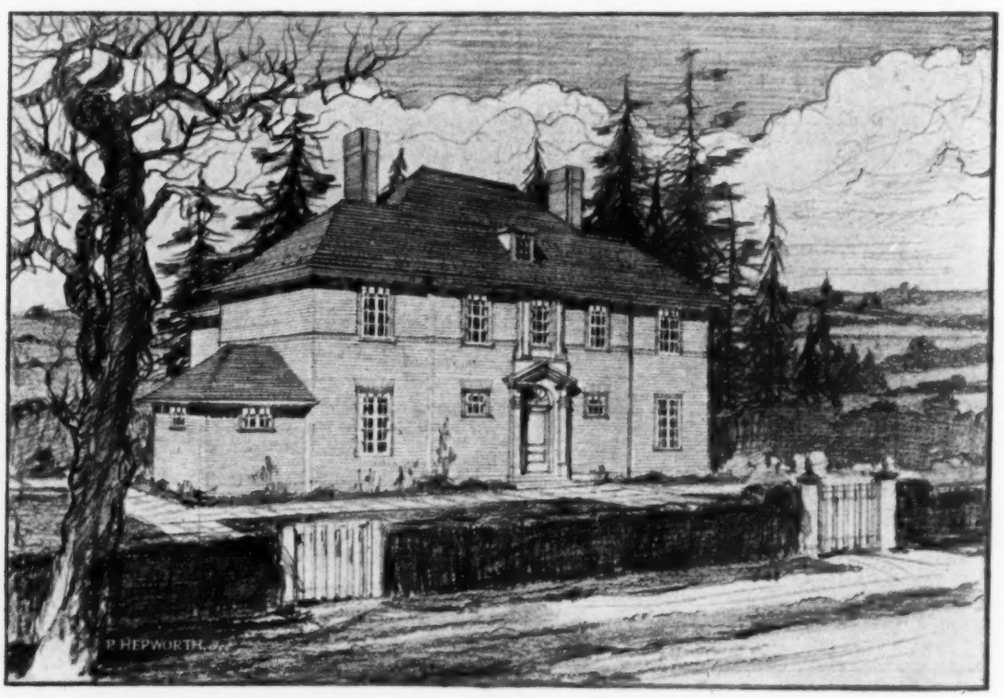


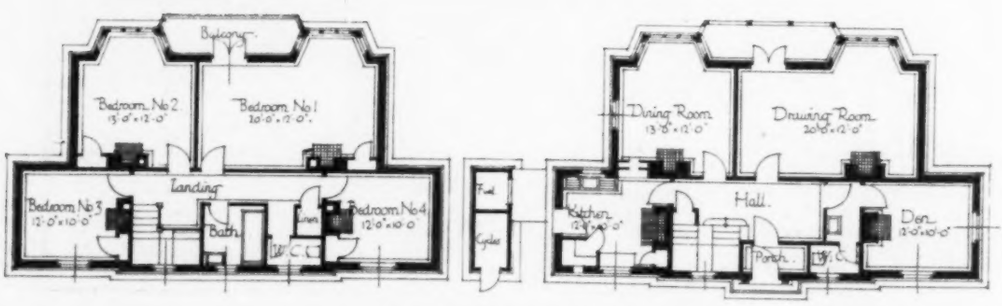
A Quadrangle of Twelve Houses, for Labour Saving Houses, Ltd., Welwyn Garden City. Messrs. Hennell & James, Architects



House at Lower Handside.

Mr. H. C. Lander, F.R.I.B.A., Architect.

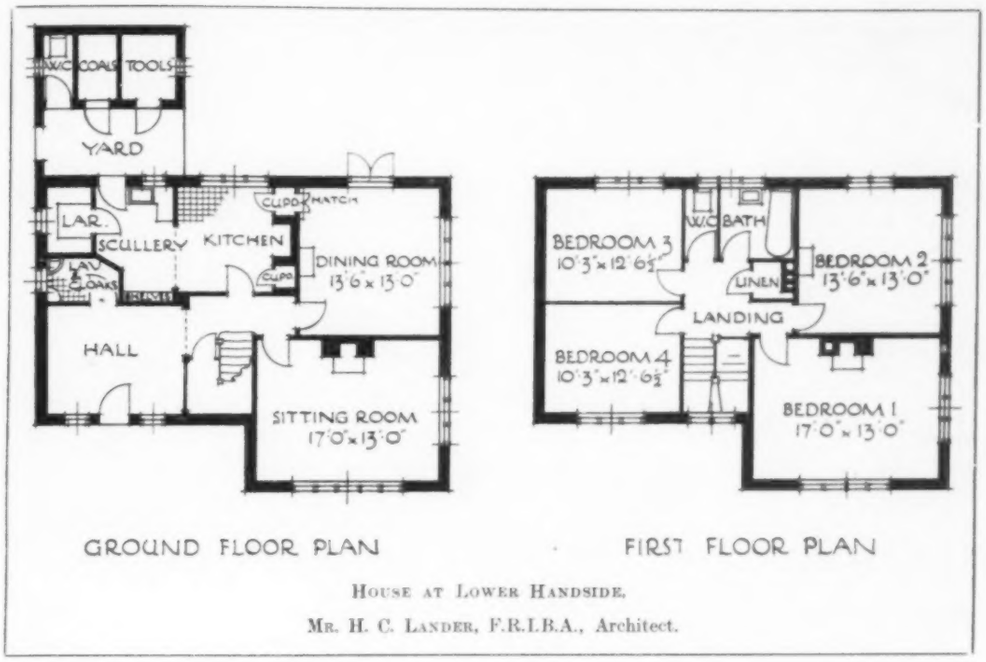




House in Valley-road.

Mr. Louis de Soissons, F.R.I.B.A., Architect.

Welwyn Garden City.



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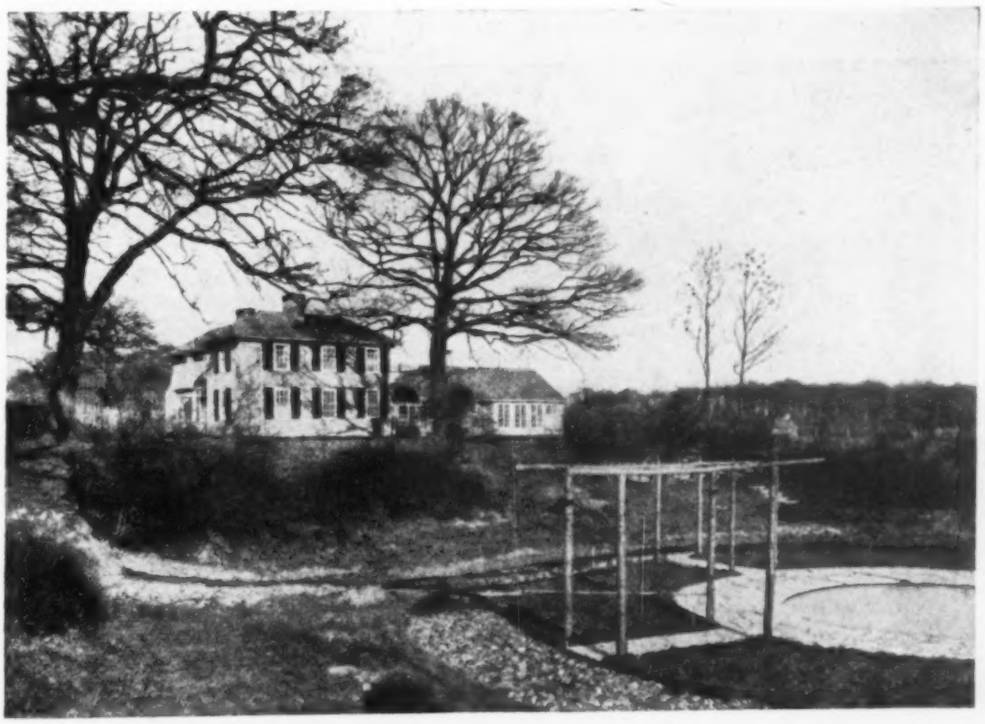
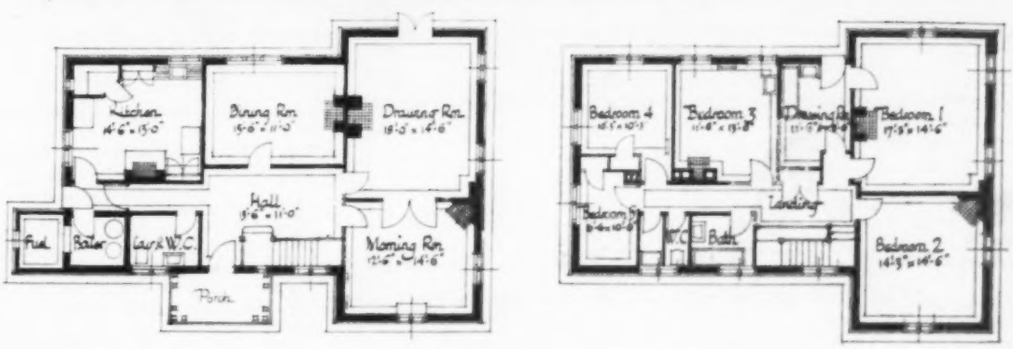




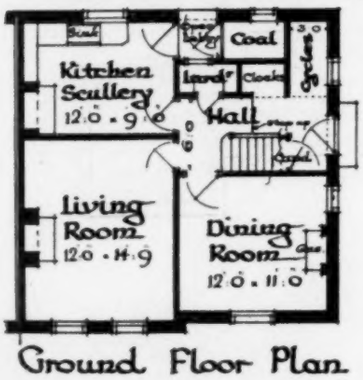
House in Guessens-road.

Mr. Louis de Soissons, F.R.I.B.A., Architect.

Welwyn Garden City.

House in High Oaks-road. Mr. H. C. Lander, F.R.I.B.A., Architect.

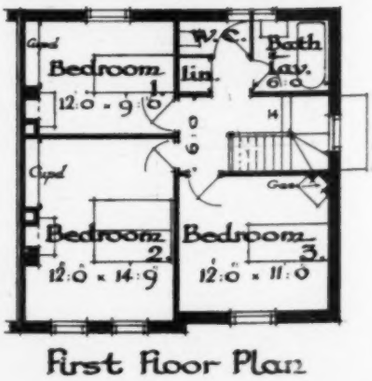
Pair of houses with Garage at
WELWYN GARDEN CITY
C.M. CRICKMER, F.R.I.B.A.
ALLEN FOXLEY, M.A.
Architects, Lincoln's Inn Fields, London, W.C.



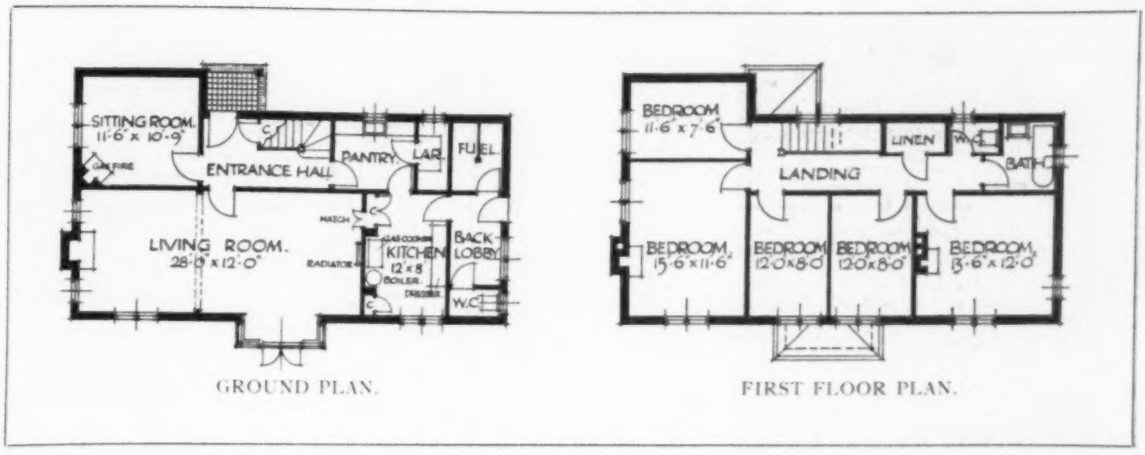
Ground Floor Plan

Pair of Houses with Garage.
Welwyn Garden City.

Messrs. C. M. Crickmer, F.R.I.B.A., and Allen Foxley, M.A., Architects.

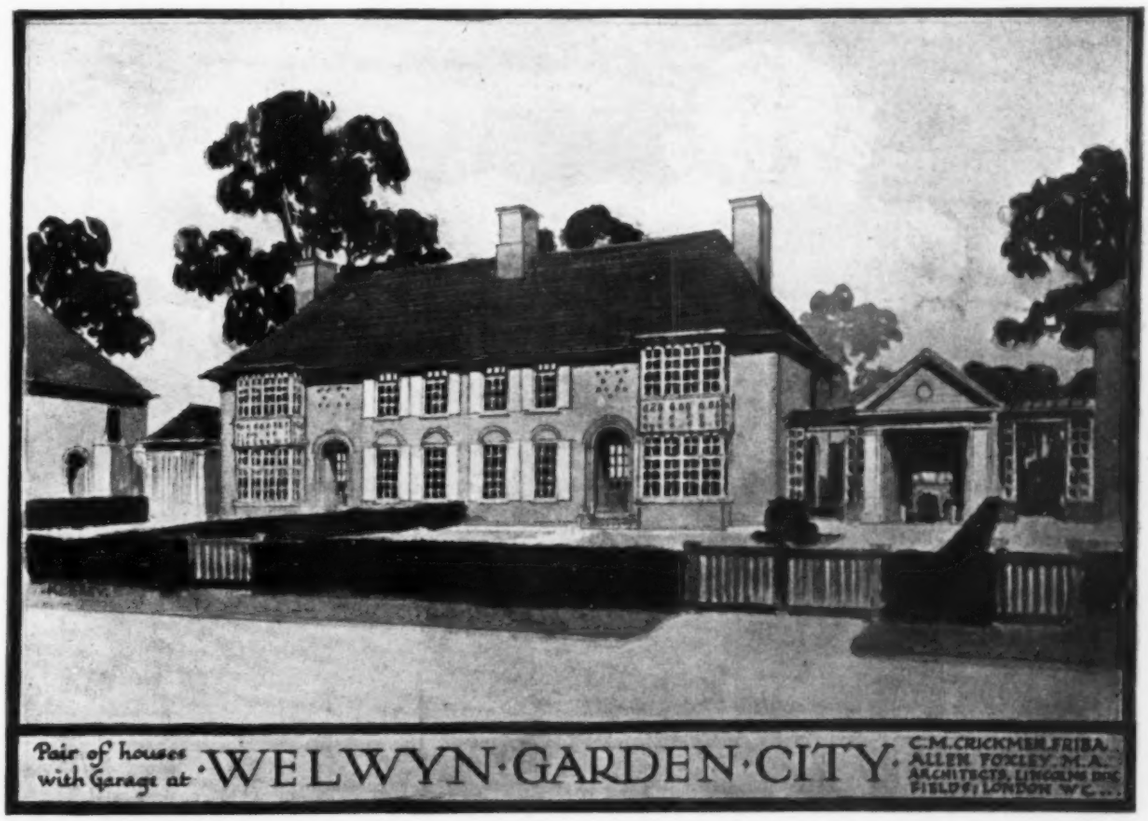


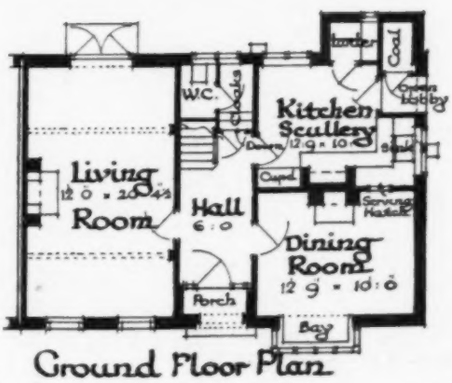
First Floor Plan

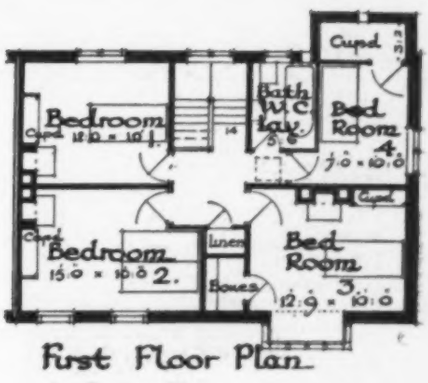


GROUND PLAN. FIRST FLOOR PLAN.

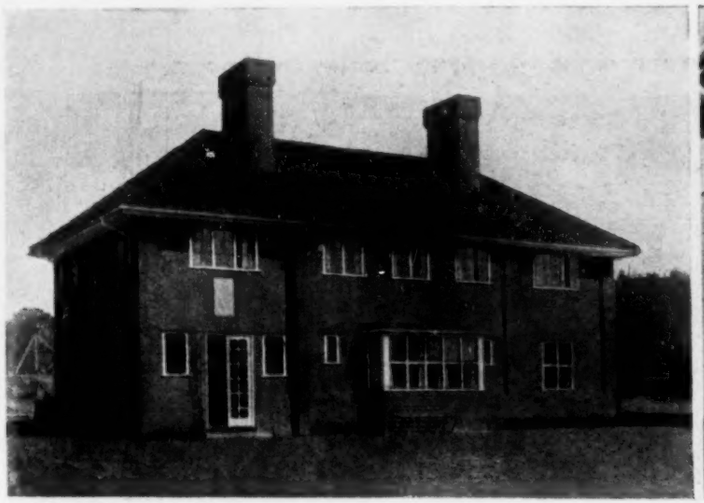
House in High Oaks-road.
Mr. H. C. Lander, F.R.I.B.A., Architect.

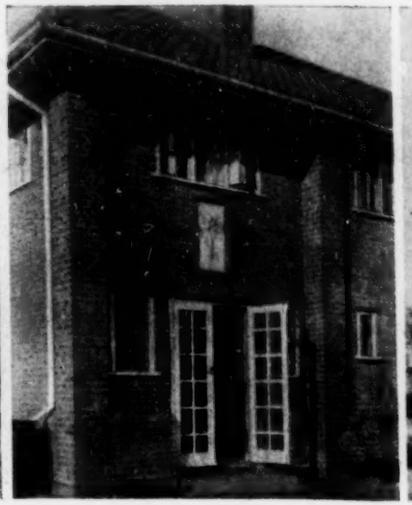

Pair of houses with Garage at WELWYN·GARDEN·CITY.
C.M. CRICKMER, F.R.I.B.A.
ALLEN FOXLEY, M.A.
ARCHITECTS, LITTLE DEAN'S YARD, WESTMINSTER, S.W.1.
FIELD 91, LONDON, W.C.

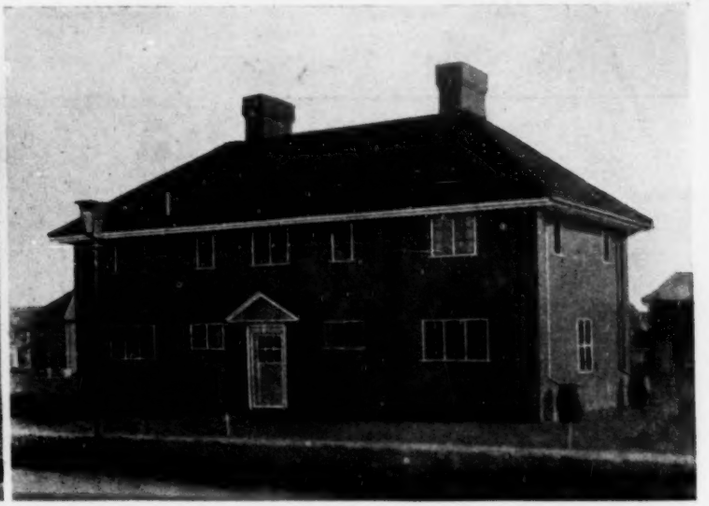


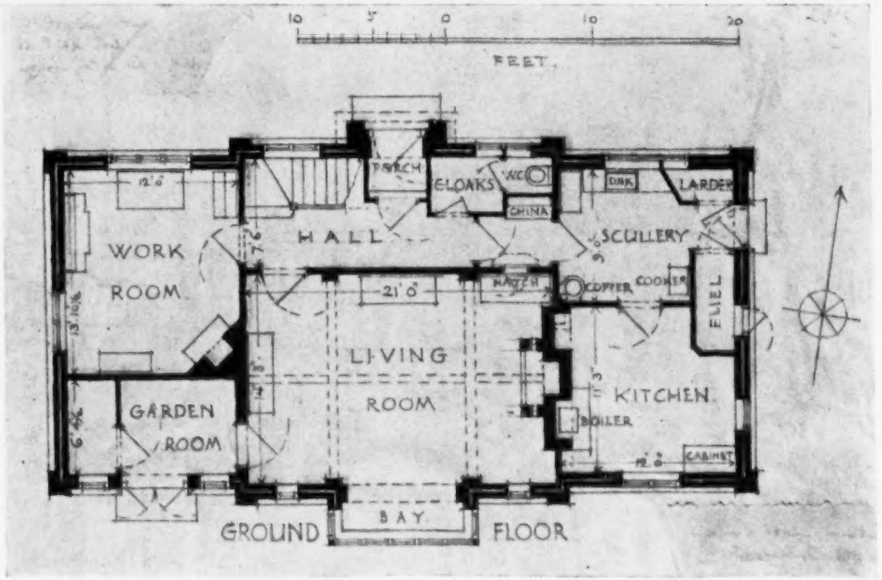


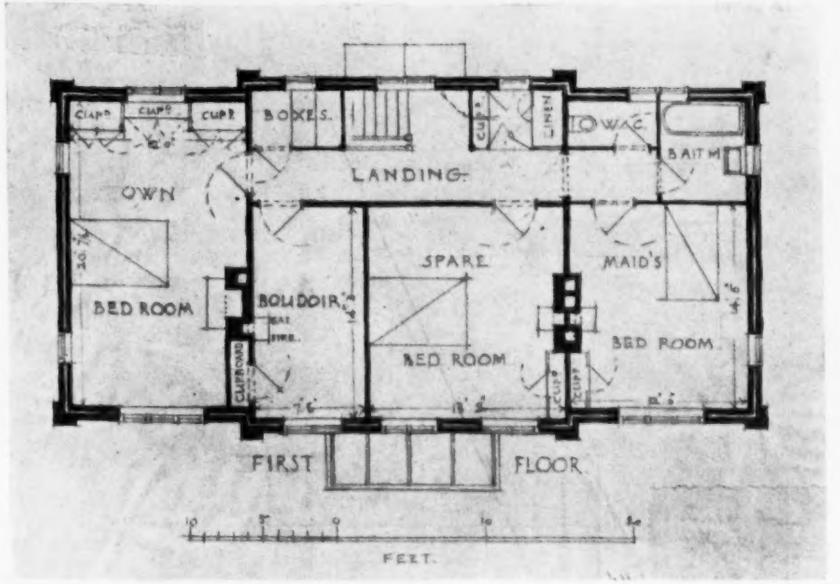
Pair of Houses and Garage.
Messrs. C. M. Crickmer, F.R.I.B.A., and Allen Foxley, M.A., Architects.
Welwyn Garden City.





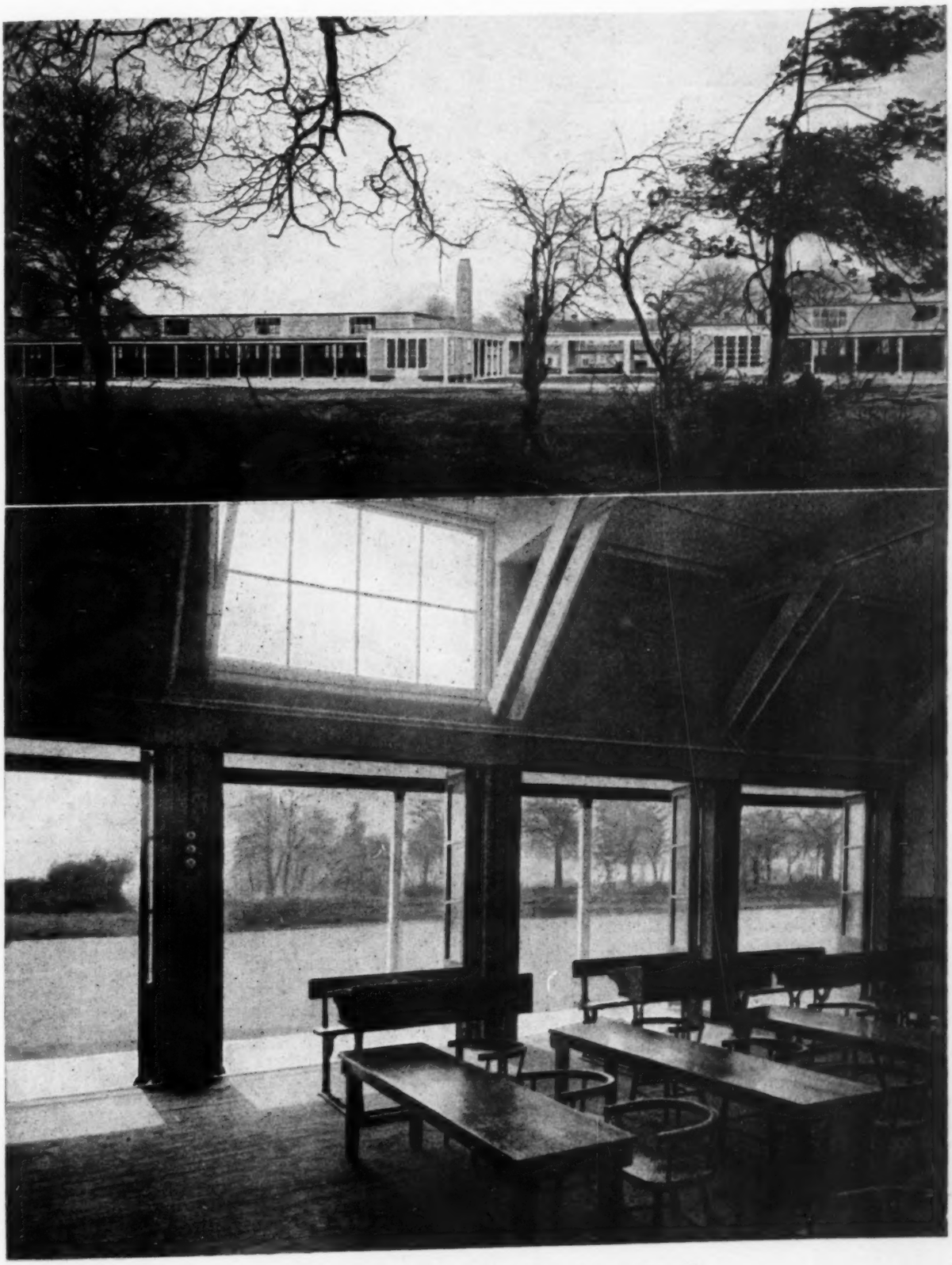






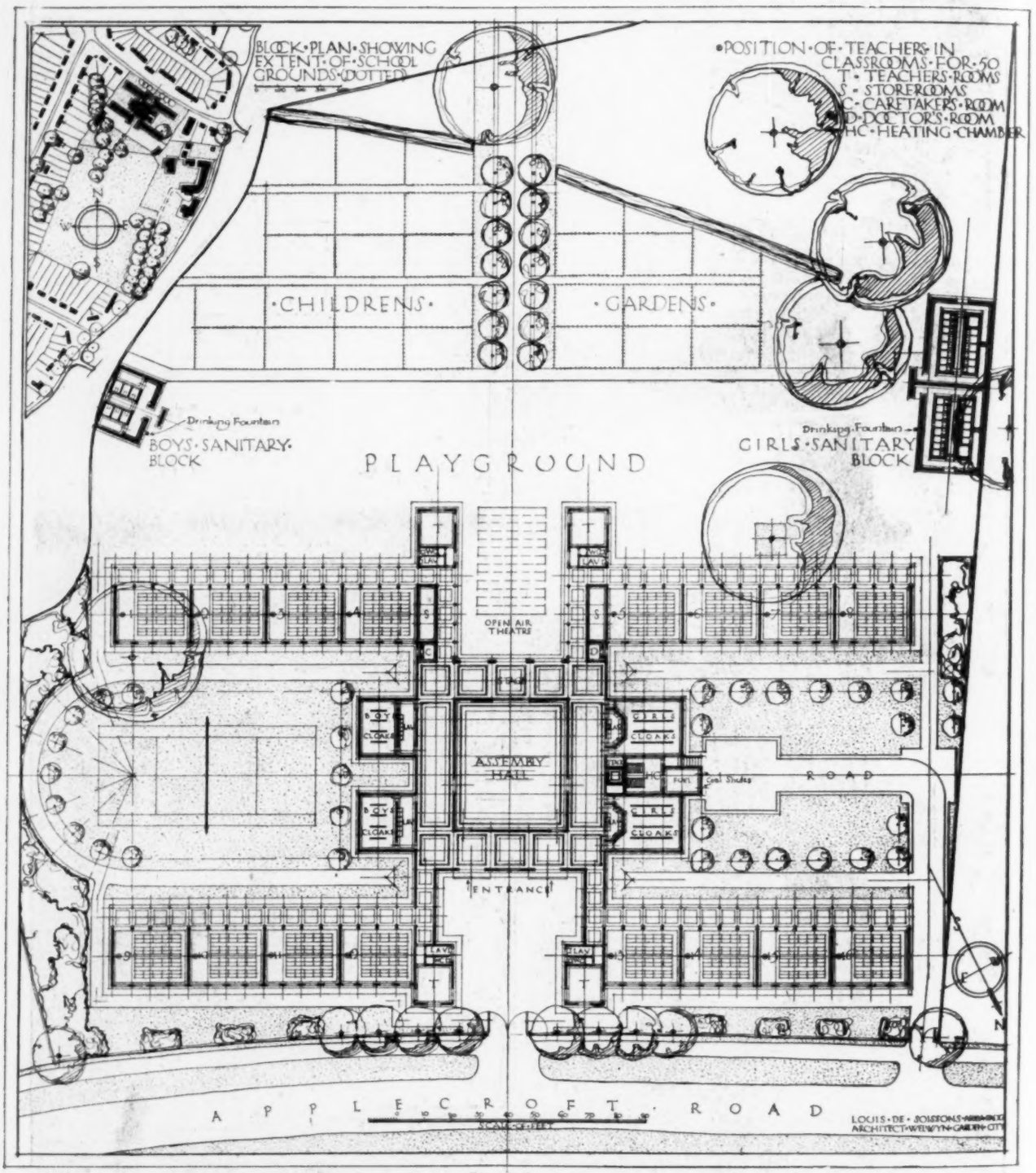
House in Bridge Road, Welwyn Garden City. MESSRS. C. M. CRICKMER, F.R.I.B.A., and ALLEN FOXLEY, M.A., Architects.

[This house was designed for Mr. Allen Foxley's own occupation. The walls are faced with Luton bricks, the pilasters and plinth of a darker colour than the general walling. The roof is hung with red "Lombardic" tiles, by Messrs. Ames & Finnis. Windows: standard steel "cottage" casements with bronze fittings, by Henry Hope & Sons, Smethwick, in wood frames. Plaster panel in relief over garden doors by Mr. Dudley Kibbler. The house fronts almost due south, and the plan is arranged to take full advantage of this. The road lies to the north of the house, and the main entrance is on that side. The garden lies to the south. The "work room" has its main window to the north to give a good light for a drawing-board. Woodwork inside and out is painted ivory white. The principal rooms are hung with grey-brown canvas. Cooking is by gas; there is no range, but a "Beacon" boiler in the kitchen supplies hot water. The builders are Messrs. Shrouder & Matthews, Stevenage, Herts.]



The Welwyn Garden City School (Herts County Council).

Mr. Louis de Soissons, F.R.I.B.A., Architect.



The Welwyn Garden City School (Herts County Council).

Welwyn Garden City: Diagram of Town Plan. (*See p. 654.*)

WELWYN GARDEN CITY.

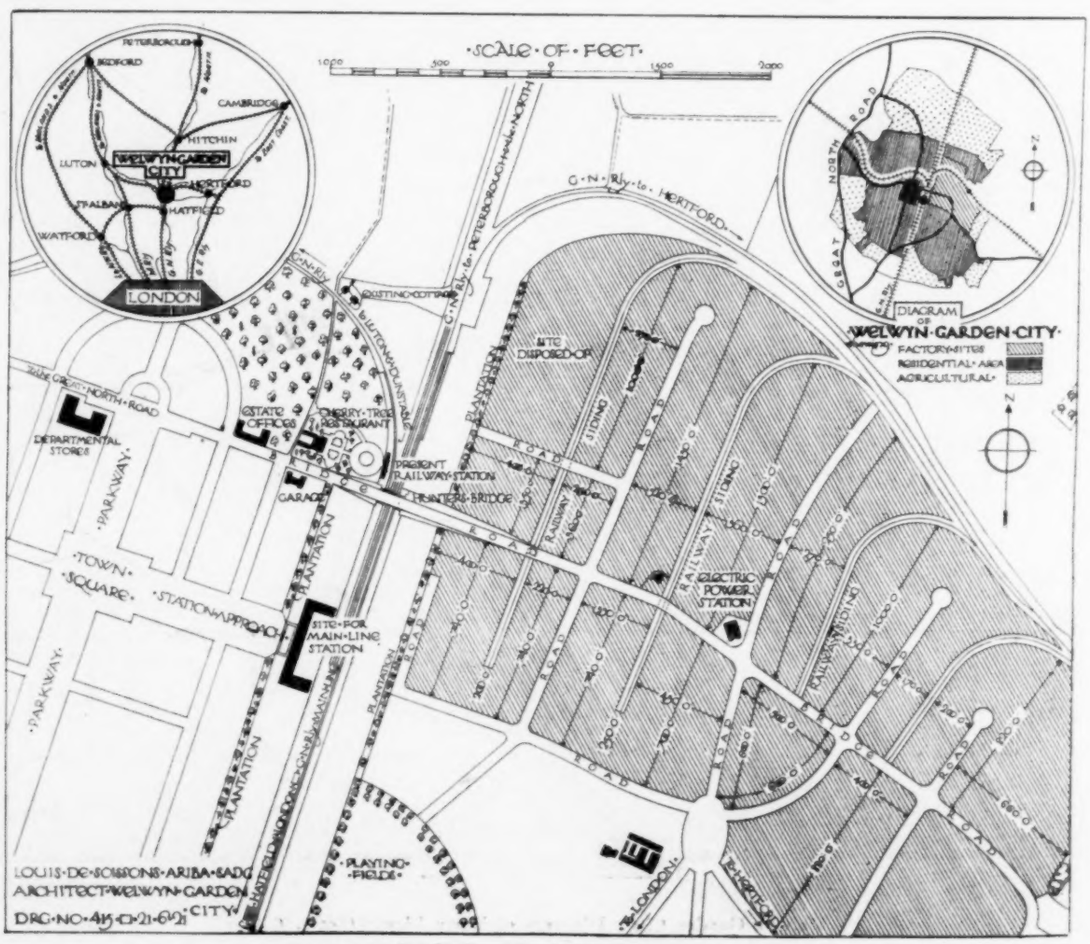
It is not often nowadays that a new town is laid out in this country. With the exception of Letchworth, begun in 1904, and Gretna, rushed up as a munition centre during the war and since regrettably—though, perhaps, necessarily—neglected, Welwyn Garden City is the only instance of an entirely new urban settlement founded on virgin soil in recent times. Though a great deal of public interest has been focussed upon Welwyn, the scope and importance of the scheme are as yet very imperfectly realised. It was initiated in 1919, directly under the auspices of the Garden Cities Association, in order to give a definite lead to the country in a bold policy of building new towns as a means of dealing scientifically not only with certain aspects of the housing question, but also with the problem of the congestion of industry in the centres of the great towns.

The theory has been often stated, but will bear repetition in view of the present renewed interest in housing matters. It is obvious in the first place, that the building of further suburbs continuous with a great urban agglomeration like London has many evils. The suburbs themselves may be, and under the present system of lay-out often are, excellent and pleasant, but the fact that they are merely sleeping places for those who go daily to the City inevitably means two things. It means that the already overburdened transport system is still further taxed in carrying an additional number of people over greater and greater distances. New lines of communication are slowly being constructed, but for many years past they have not kept pace with the increasing demand, and in any case the expense of the season ticket and the loss of time spent in the journey are a serious reduction of the resources of the suburban dwellers. It means also that the pressure on office and industrial accommodation in the heart of the City is continually being raised, with very bad effects on health and manufacturing efficiency. For example, in such boroughs as Finsbury and Bethnal Green, businesses are continually encroaching on residential districts, to the detriment of both. There are, of course, good reasons in many cases for the establishment of new manufacturing businesses in such unpromising situations, one of the chief being the desirability of being close to allied businesses. But when all allowance has been made for this factor, it is obvious that such haphazard development is in the main thoroughly bad, and that the expansion of great cities "in the solid," with their ever more complicated transport systems and overcrowded central streets and buildings, must very soon be brought to a stop if disaster is not to overwhelm the whole affair.

The Garden City and Decentralisation.

The garden city solution is essentially simple. It is that, instead of expanding industry in the centre of cities and the equivalent housing accommodation in suburbs, both factories and dwellings should be provided near each other in properly organised satellite towns, not too distant from the old city for support during the growing phase, but far enough out to have the benefit of country air and to develop a capacity to stand alone as early as possible. It is pointed out that sites can be acquired more cheaply twenty or thirty miles out than in or on the outskirts of the urban area, that there are no obstructions to the boldest and best town-planning, and that as part of the lay-out of the new towns extensive agricultural areas can be readily reserved as rural belts to limit their size and to protect them from "growing into" neighbouring settlements. Given that the demand for both new manufacturing premises and houses exists, the advantages of providing sites for them in this direct way are patent. The sites can be specially chosen for their industrial convenience; the manufacturer will thus get ample space and healthy working conditions for much less than the cost of providing a crowded and unhealthy factory in town. The staff and workmen can live within walking distance of their daily employment, in country surroundings, and at less expense than in an ordinary suburb, and they save the time and the wear and tear of the daily journey.

The location of Welwyn Garden City was founded to illustrate this "satellite town" idea. The site acquired, which was entirely rural and park land in 1919, occupies about 2,300 acres, 21 miles from King's Cross, at the junction of the London & North Eastern Railway main line with two branch lines. As a situation for a new industrial centre it would be hard to beat; and its position in the centre of a district of large parks makes it most admirable as a place of residence. The town plan is based upon a very careful study of the features of the site and of the economic requirements of a town of a maximum population of 50,000. For example, the size of the factory area, which is compactly placed in one part of the town and is screened by the lie of the land from the residential districts, has been carefully calculated to provide ample space for industries of the classes most prevalent in the London area; it has been designed, that is, with an eye upon the expected "devolution" of manufacturers from central London. The shopping centre has been similarly calculated, not how-



Welwyn Garden City: Lay-out of Factory Area.

ever upon the proportion of shops to the population in greater London, which is often excessive and bad for business, but upon an estimate of the shopping accommodation really necessary for a town of the size contemplated. In each of these cases, of course, a margin of safety has been allowed. There are many other features of the town plan which are of great interest, notably the road scheme, which is a compromise between the theoretical ideal and the necessities imposed by the contours and railway crossings.

Engineering Works.

Considerable headway has been made with Welwyn Garden City since work was commenced on the site in 1920. A number of the principal roads have been constructed, the chief of these being a main road from the new station on the London & North Eastern Railway to the Great North-road, which opens up a wide residential area. The water supply has been derived from a semi-permanent bore in the centre of the estate. Work is now proceeding on a permanent pumping station in the valley of the Mimram River, at the northern extremity of the estate, and upon covered reservoirs on the high wooded land in Sherrard's Park Wood, near the town centre. The first unit of this installation will supply 5,000 people, and there is a proved supply for the ultimate population of 50,000. The design of the pumping station, which is in red brick with tiled roof, is illustrated in this issue (p. 656). The architect is Mr. Louis de Soissons, F.R.I.B.A., S.A.D.G., City Architect to Welwyn Garden City, and the builders are Welwyn Builders & Joiners, Ltd., of Welwyn Garden City.

The Pumping Plant

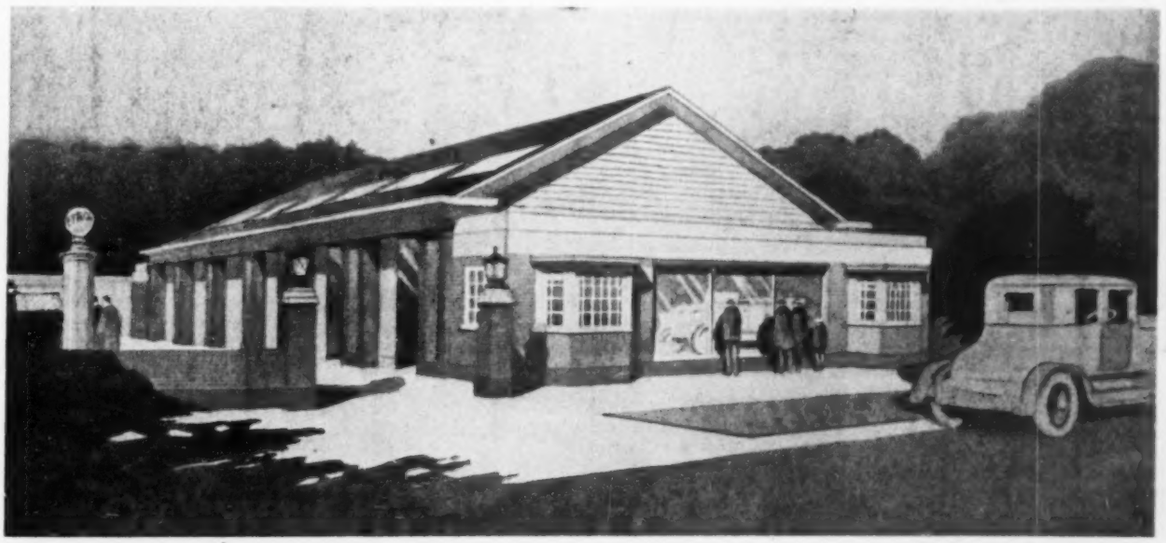
is being installed in duplicate, and consists of the well-known "Ashley" type of bucket and plunger deep borehole pumps, 11 in. dia. by 36 in. stroke, each set being capable of delivering 250 gallons per minute against a head of 305 ft. through a 15 in. cast iron rising main to the reservoirs, 2,100 yds. distant. The pumps are to be driven by horizontal oil engines of the "Hornsby" type, capable of giving 45 B.H.P. on refined oil. Both engines will be provided with self-starters. By a special device either pump can be driven by either engine. The firm responsible for the pumping plant are Messrs. Glenfield & Kennedy, Ltd., of Kilmarnock, with Messrs. Ruston & Hornsby, Ltd., of Lincoln, as sub-contractors for the oil engines.

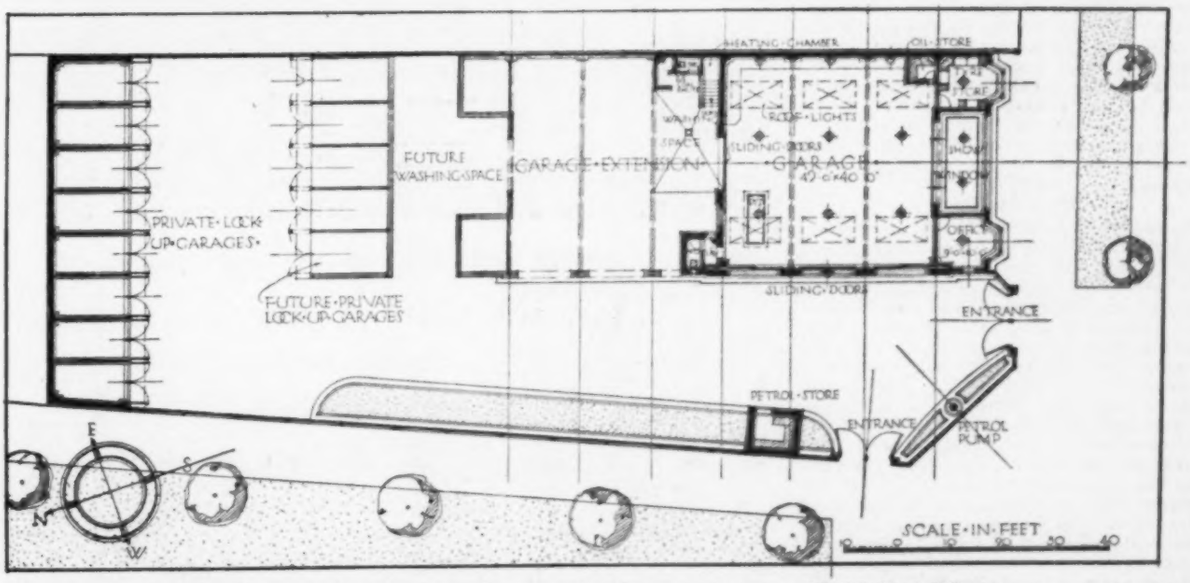
The service reservoirs are at an altitude of 415 ft. above ordnance datum. The complete scheme provides for ten reservoirs each of 150,000 gallons capacity, having a top water level of 422.5 ft. above ordnance datum. Two only are constructed at present. Mass concrete is used for the walls and floors, while the roof is formed of reinforced concrete on the Fawcett system. A photograph of the first section of the reservoirs is shown on p. 658.

The rising main to the reservoirs consists of 15 in. spigot and socket pipes, chiefly supplied by the Staveley Iron Co., of Chesterfield. This main will suffice for all future requirements. The principal delivery main, 15 in. in diameter, has been laid and connects to the distribution mains in the roads already developed. All the mains and reservoirs are being carried out by Messrs. Welwyn Builders & Joiners, Ltd.

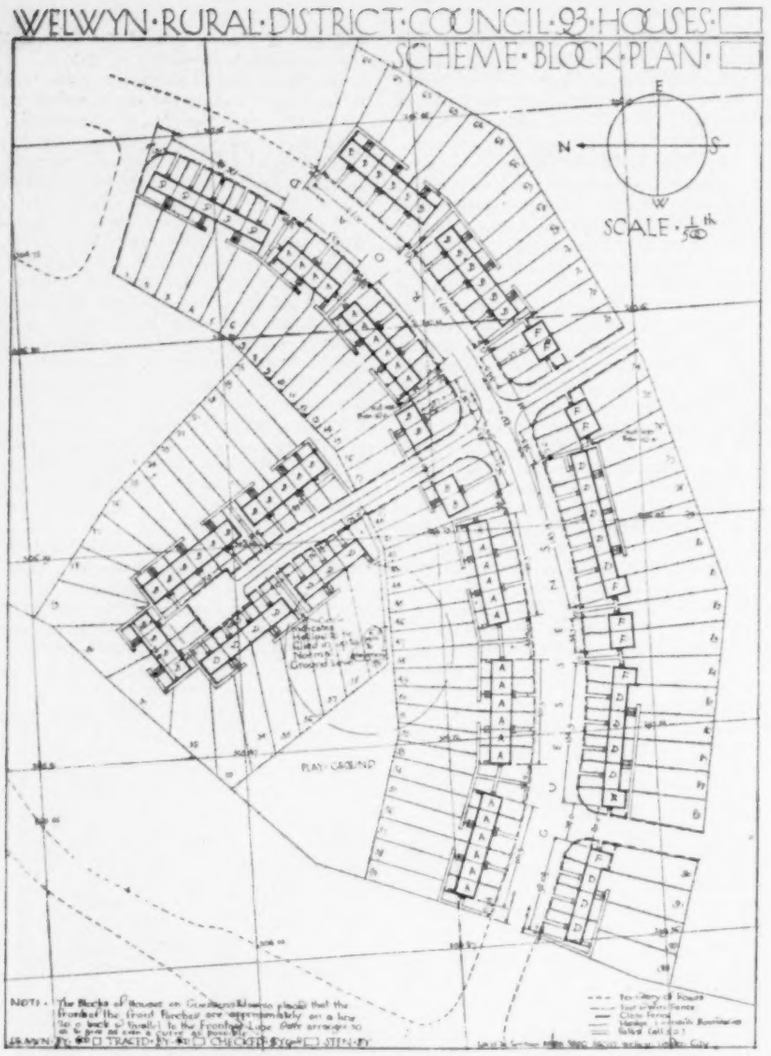
The town sewerage has been handled up to the present by small disposal works, which, though of the most modern design, are not permanent, and work has recently been commenced on the permanent disposal works on the eastern boundary of the estate, to which most of the developed area will drain by gravity. The consulting engineer of the water and sewerage works is Mr. J. D. Haworth, M.S.E., M.R.San.I., F.G.S., and the contractors are Welwyn Builders & Joiners, Ltd. All the engineering works are being carried out under the supervision of the City Engineer, Captain W. E. James, A.M.I.C.E.

Electricity is connected to all developed sites, and no other lighting is used in the Garden City. The supply is taken by the Estate Company from the North Metropolitan Supply Co., Ltd., who deliver in bulk from their Hertford power station to a sub-station in the





Public Garage at Welwyn Garden City. Mr. Louis de Soissons, F.R.I.B.A., Architect.



Lay-out of Ninety-three Houses for the Welwyn Rural District Council.

Mr. Louis de Soissons, F.R.I.B.A., Architect.

houses sell readily their building programme can be extended without the unnecessary removal of plant. The plans are in each case prepared by an architect of repute, and as far as possible designs are standardised to secure economy, minor variations being introduced as the building proceeds to suit purchasers. Printed matter describing all the houses built by building firms is prepared by the Estate Office, with the result that a wide range of choice is offered to the prospective residents.

Factories and Workmen's Housing.

The progress of the factory development is bound up with the provision of workmen's houses, which hitherto has proceeded rather slowly owing to the closing down of the Government Housing Scheme. In 1920–21 the Garden City Company, through a public utility society, built 50 houses to the designs of Mr. C. M. Crickmer, F.R.I.B.A., chiefly for the housing of their own workmen and staff. The erection of houses by the local authority had to await the formation of the new civil parish in October, 1921, but soon after that date the Welwyn Rural District Council put in hand the erection of 50 houses which were completed during 1922. These houses, designed by Mr. L. de Soissons, were built in red facing brick, hollow walls, with red-tiled mansard roofs, and the accommodation comprises, in most of the houses, living-room, parlour and scullery and three or four bedrooms. The contract price was about £500 each, and the contractors were the Unit Construction Co., Ltd.

The Welwyn Rural District Council have now adopted a scheme for a further 93 houses of a somewhat smaller type, the object being to build houses which could be let at a rent which would not involve a charge on the rates. In this case also the houses were designed by Mr. L. de Soissons, and the lowest tender is that of Messrs. Roberts (Birmingham), Ltd., at an average price of £284 per house. The all-in price of these houses, including the land and development, will be about £333. The lay-out is illustrated on this page. The houses will be entitled to the Government subsidy and the rents will probably be about 8s. 6d. to 9s. per week inclusive of rates. (The rates are now about 8s. in the £.)

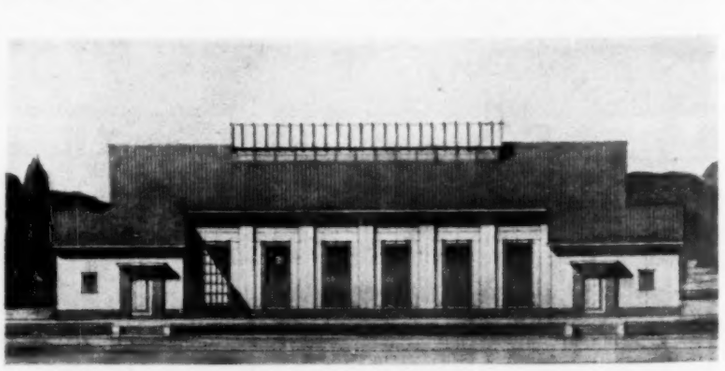
The possibility of building houses at low rents, with the prospect of a revival of trade, will doubtless give an impetus to the develop-

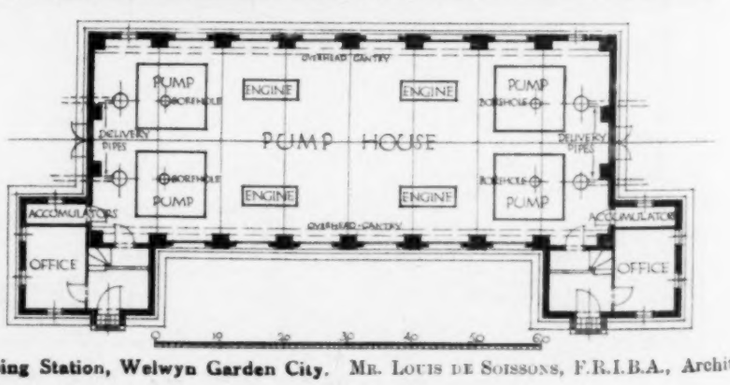
centre of the factory area. The sub-station building, designed by Mr. Louis de Soissons, is an interesting one, and is illustrated in this issue (p. 657). The builders of this sub-station were Welwyn Builders & Joiners, Ltd., and the consulting engineers Messrs. Preece, Cardew & Rider. The system will shortly be taken over by the Welwyn Garden City Electricity Supply Company, who are obtaining a Special Order for the district.

Gas is connected to all developed sites and is extensively used for cooking and heating. It is supplied jointly by the Welwyn and Hatfield Gas Companies, the Garden City being divided between the areas of supply of the two companies.

House Building.

The number of new houses built is already over 400, and a further 150 are commenced or about to be commenced. A considerable number of these have been built by public utility societies operating with Government loans and subsidies under the Housing Act of 1919, while many have been built to order for the occupiers. The work of many different architects and builders is represented, the general lay-out being in the hands of the City Architect. A significant development is the advent of a number of building firms who are building houses for sale. The houses provided by this means range from the small four-roomed cottage to the £2,500 family residence, and some typical plans are illustrated in this issue. The builders take sites from the Garden City Company on a building lease at a peppercorn rent for a year, usually with a reservation of additional land close by so that if the





Pumping Station, Welwyn Garden City. Mr. Louis de Soissons, F.R.I.B.A., Architect.

ment of the factory area, a large portion of which will be available for development on the completion of the sewerage works now under construction. Up to the present the principal sites taken are those of Messrs. R. S. Murray & Co., Ltd., confectionery manufacturers, of Clerkenwell (10 acres) and Messrs. W. H. Pease and H. D. Shrimpton, machinery manufacturers and merchants (five acres). Joinery works have been established by Welwyn Builders & Joiners, Ltd. A brickworks, making an excellent facing brick, is also in operation

The Welwyn Garden City School.

One of the most interesting buildings recently erected is the Welwyn Garden City School, which we illustrate on p. 652*a*. The school is provided in the ordinary way by the Hertfordshire County Council, but a local "Educational Association" has raised substantial funds for improving the standard of education given therein. The building is of timber construction, the principal framing being in oak, with walling of cement blocks and roofs covered with 3-ply "Mastic" roofing. The classrooms are arranged so that in the summer they can be entirely open on the south side, where there is a covered verandah. The partitions between the classrooms are movable, the object being the reduction of the size of the rooms when a more enlightened national housing policy permits the decreasing of the size of classes. The building is extremely light and attractive, while frankly of a "semi-permanent" character, which is considered an advantage in that the educational requirements of 1943 may justify its being scrapped and rebuilt on a new plan. The architect of the school is Mr. L. de Soissons, the contractors Welwyn Builders & Joiners, Ltd., and the heating contractors Messrs. Haden & Sons, Ltd., Lincoln House, Kingsway, London, W.C.2.

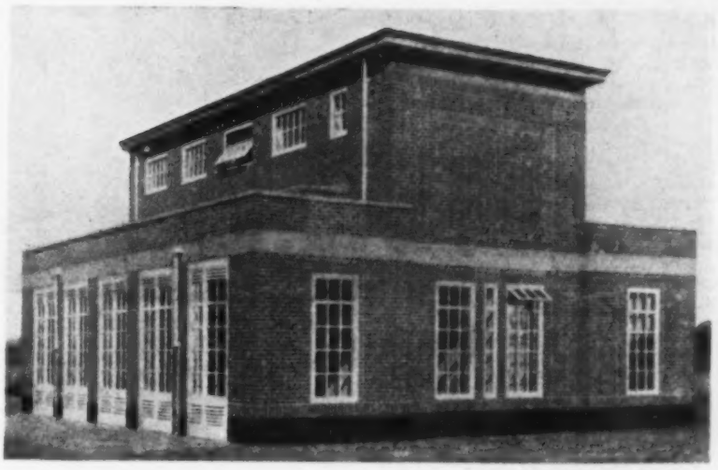
Other Buildings.

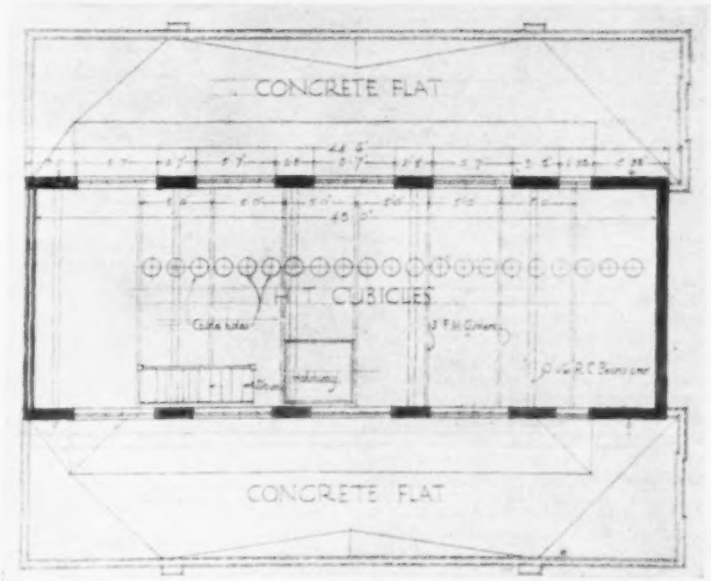
Among other buildings recently erected are the central departmental stores, owned by a subsidiary company and already running to eighteen departments. This is constructed in oak framing, with filling of chalk and cement concrete blocks, the roof being of the Belfast truss type covered with Ruberoid sheeting. A second section of this building has recently been completed, and a third is about to be commenced. The Cherry Tree restaurant and hotel, near the station, is a frankly temporary building, the chief interest of which is the vivid scheme of internal decoration. A small public hall, known as the Lawrence Hall, has recently been completed to the designs of Mr. H. C. Lander, who is also responsible for the conversion of a sixteenth-century barn into a very attractive "guild-room" for the workers in the New Town Agricultural Guild, who are farming the greater part of the agricultural belt of Welwyn Garden City.

Church buildings have been designed by Mr. L. de Soissons for the Church of England, the Free Church (which represents a local combination of several well-known churches), and the Roman Catholic Church. Work is commencing shortly on the first unit of the Church of England buildings.

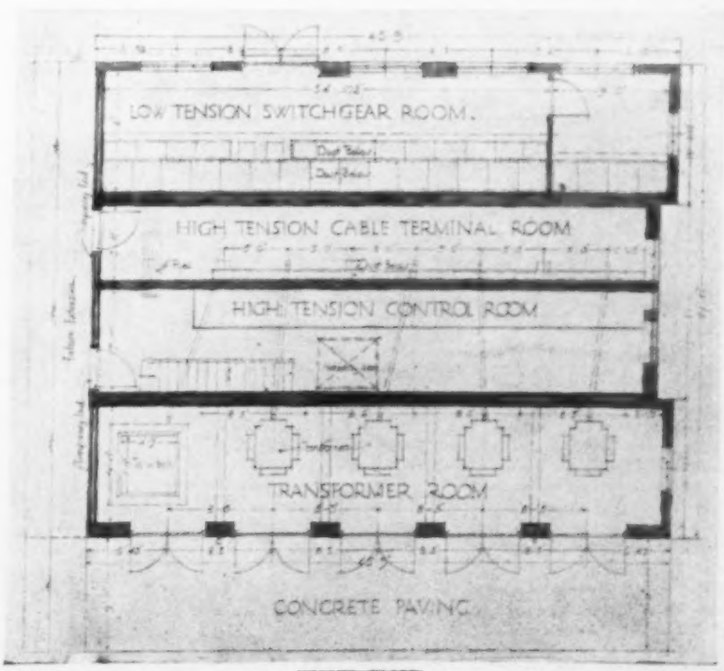
Houses recently erected include designs by Messrs. C. M. Crickmer, F.R.I.B.A., and Allen Foxley, B.A.; Messrs. Bennett & Bidwell; Messrs. C. M. Hennell and C. H. James, A.R.I.B.A.; Mr. H. C. Lander; and Mr. L. de Soissons. A few of these are illustrated in the present issue.

Among the buildings illustrated in this issue are:—(1) House in Valley-road (architect, Mr. L. de Soissons; contractors, Messrs. R. Ginn & Son, Hertford). (2) House in Guessens-road (architect, Mr. L. de Soissons; contractors, Welwyn Builders & Joiners, Ltd). (3) A group of 12 houses in Russellcroft-road (architects, Messrs. C. M. Crickmer, F.R.I.B.A., and Allen Foxley, M.A.; erected by Messrs. Bennett Bros., of Letchworth). (4) House in High Oaks-road (architect, Mr. H. C. Lander, F.R.I.B.A.; contractors, Messrs Palmer & Armitage, Letchworth). (5) Sub-station for Welwyn Garden





FIRST FLOOR.



SECOND FLOOR.

Electricity Sub-Station, Welwyn Garden City. Mr. Louis de Soissons, F.R.I.B.A., Architect.

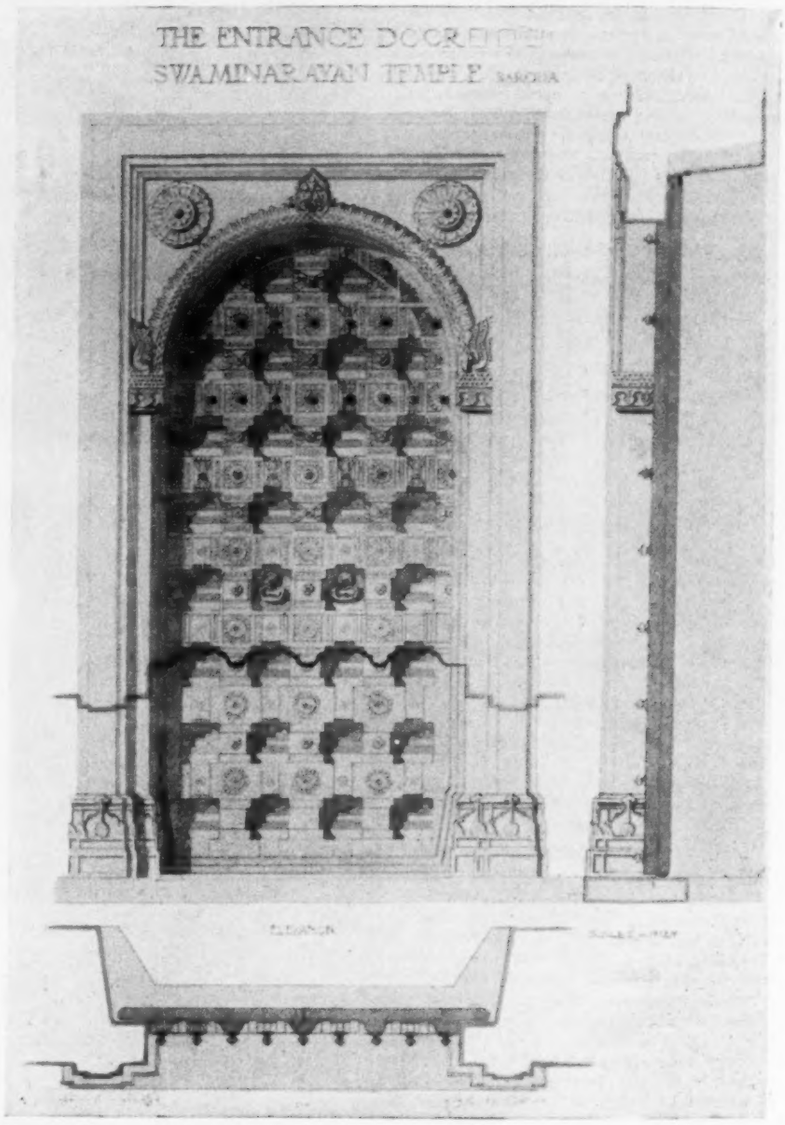
City Electricity Supply Co., Ltd. (architect, Mr. L. de Soissons; contractors, Welwyn Builders & Joiners, Ltd.). (6) Pumping Station (architect, Mr. L. de Soissons; engineer, Mr. J. D. Haworth; contractors, Welwyn Builders & Joiners, Ltd.). (7) Garage (architect, Mr. L. de Soissons; contractors, Messrs. R. Ginn & Son). (8) House at Lower Handside (architect, Mr. H. C. Lander, F.R.I.B.A.; contractor, Mr. J. Naden, Hatfield). (9) House for Mr. Allen Foxley (architects, Messrs. C. M. Crickmer, F.R.I.B.A., and Allen Foxley, B.A.; contractors, Messrs. Shrouder & Matthews). (10) Quadrangle of 12 houses in Delecott Close, for Labour Saving Houses, Ltd. (architects, Messrs. Hennell & James; contractors, Messrs. Watkin & Son).

THE RENT ACT: USE OF FURNITURE.

THERE have been a number of cases recently turning upon the question as to what "attendance or use of furniture" is sufficient to bring the premises let within the proviso to section 12 sub-section (2) of the Rent Act, and thus outside the legislation.

The latest case is Rimmer and Another *v.* Carson (*The Times*, March 24). The action was brought by the landlords of a dwelling-house, of which the ground and first floors with two large basements had been let to the defendant, with the garden also, under an agreement dated November 23, 1921, for three years from December 25, at a yearly rent of £200 for the first year and £240 for the two following years, the tenants to pay rates and taxes. The agreement provided that the landlord should partly furnish the rooms, and in consideration of this the tenant had undertaken to do all the inside painting and sundry small repairs.

This case differs from some other cases we have noted in that the plaintiffs were not seeking to recover possession, but were suing for arrears of rent, for the tenants had not paid any rent at all since they entered into occupation. If rent be in arrear even under the Rent Act, possession can be obtained, subject to the discretion of the court [(see section 5, sub-section (1) (*a*)], but where arrears of rent are being sued for it raises the question of the standard rent. The point, therefore, in the case was: Did the "use of furniture" take the premises altogether out of the Act? If it did not it was conceded by the plaintiffs that the Act would apply, and an apportionment would have to be made to ascertain the rent.



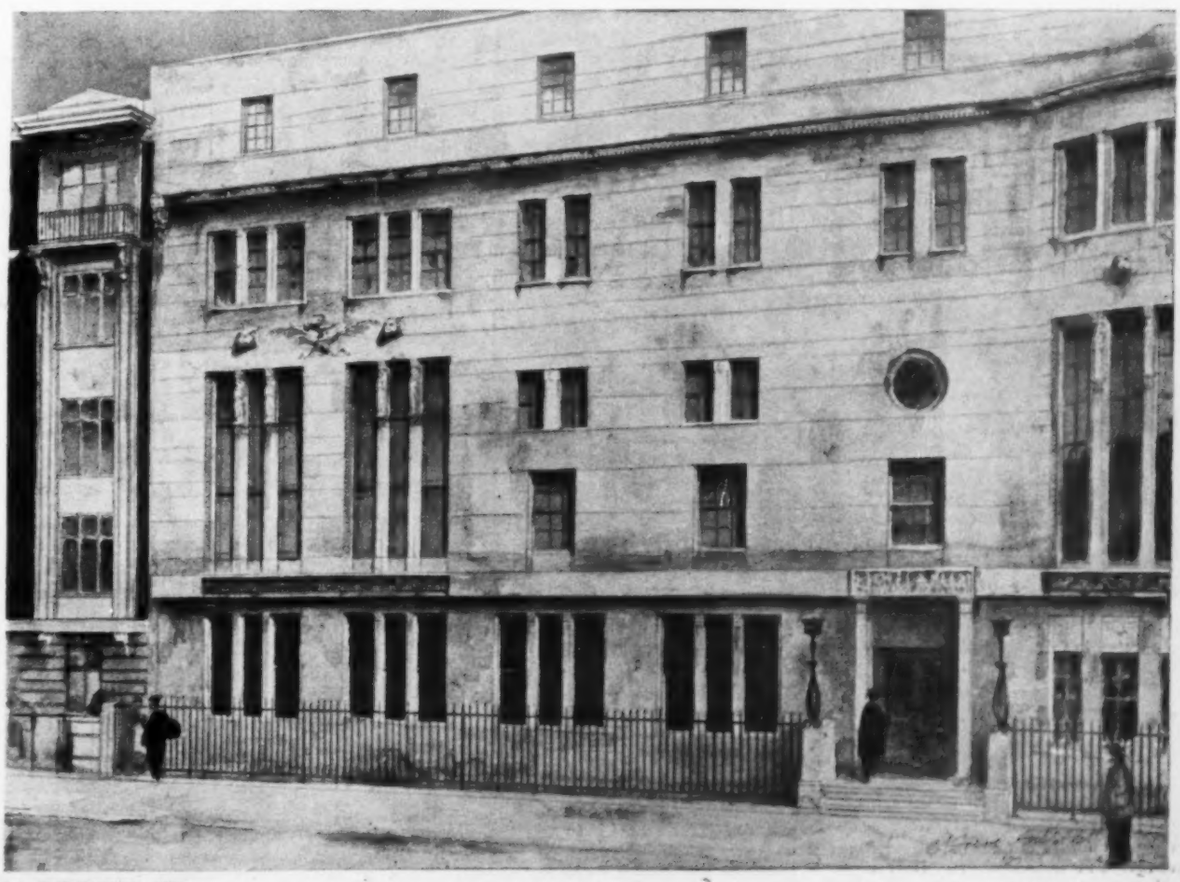
Swaminarayan Temple, Baroda: Entrance Door. From a Drawing by L. M. CHITALE.

In the course of his judgment the judge considered the cases we have recently noted, and, of course, especially the decision of the Court of Appeal in Wilkes *v.* Goodwin (Weekly Notes, March 24, *The Builder*, March 23). The court pointed out that the mere use of an expression in a lease would not conclude the matter, as there must be a *bona fide* letting, but that the "use of furniture" to exclude the operation of the Act need not be so extensive as to render the house "a furnished house." Referring to Wilkes *v.* Goodwin, the judge said he interpreted that decision, which laid down the two tests to be applied, *bona fides* and the principle of *de minimis non curat lex*, as follows: The landlord must show that there was included in the letting a substantial charge for a quantity of furniture sufficiently large to exclude any reasonable application of the *de minimis* rule, and he considered this ruling was in accordance with the principles laid down by the Court of Appeal in Wilkes *v.* Goodwin, and by the Divisional Court in Crane *v.* Cox (*The Builder*, February 2, 1923), and that the decision of Mr. Justice Eve in Dick *v.* Duncan (*The Builder*, March 30) agreed with the view he (the judge) had expressed in Wood *v.* Carwardine (*The Builder*, March 30).

It is only necessary to add that the Court further pointed out that linoleum had been held to be "furniture" by the Court of Appeal in Wilkes *v.* Goodwin, but that in the learned judge's opinion the word "furniture" did not denote merely fixtures and fittings.

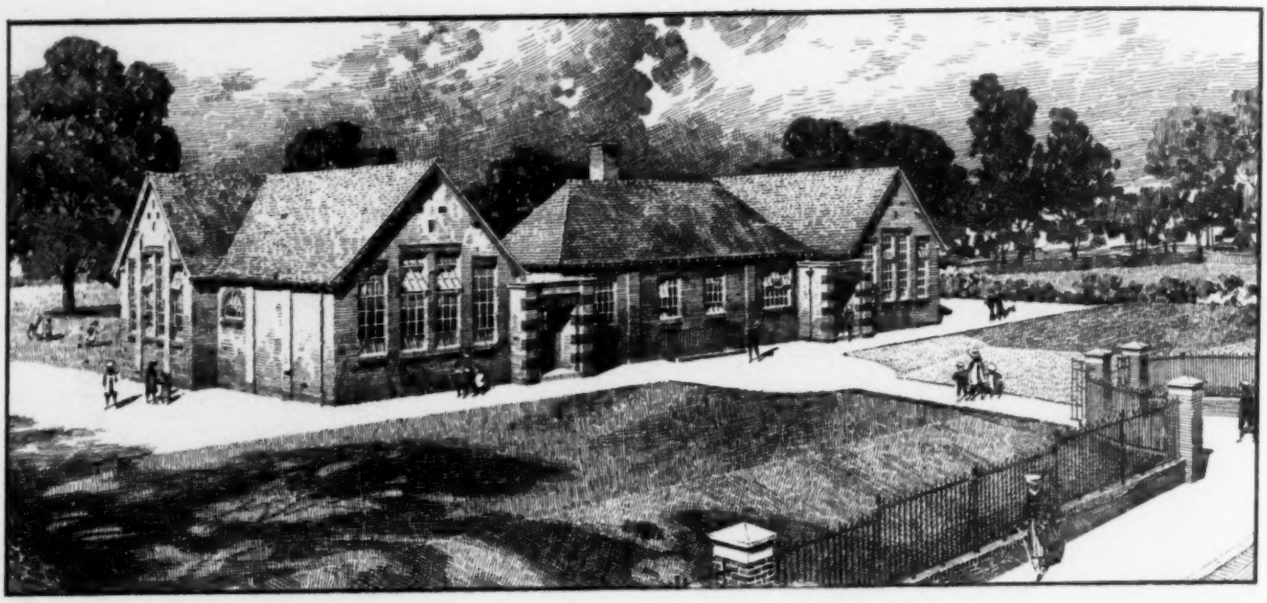
First Section of Reservoir, Welwyn Garden City.
MR. J. D. HAWORTH, M.S.E., M.R.San.I., Engineer.

Highgate Hall. Mr. Eustace Carrie Frere, A.R.I.B.A., Architect.

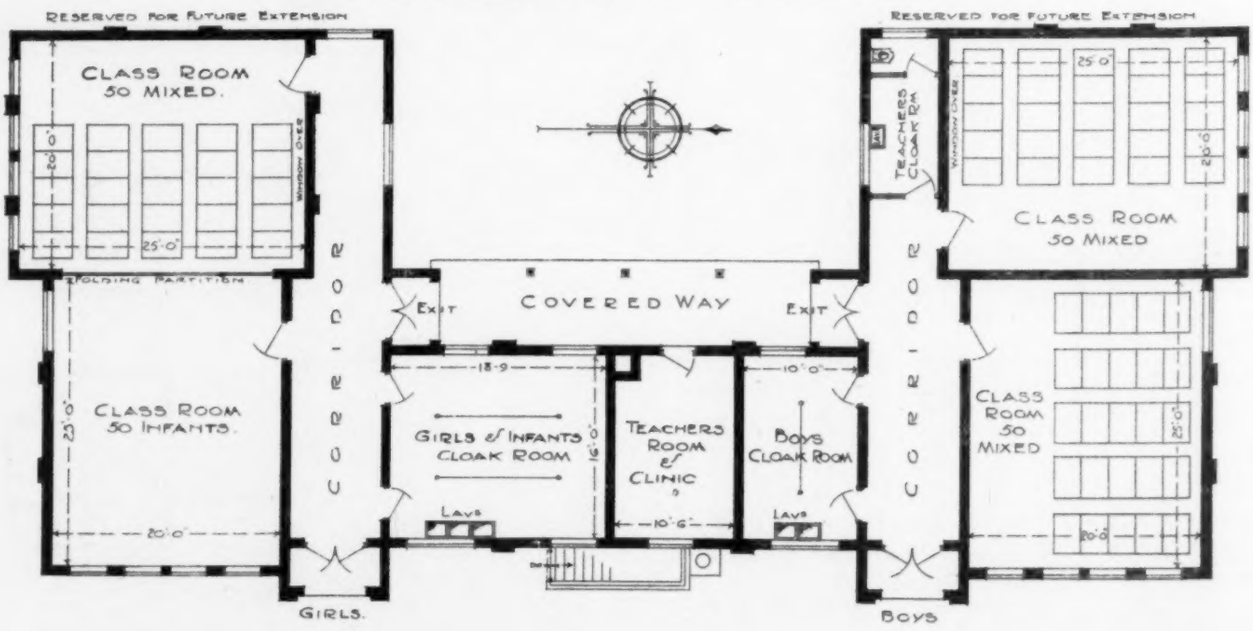


R.A. EXHIBITION, 1922.

Premises in Hallam-street for the Dental Board of the United Kingdom. Mr. Eustace Carrie Frere, A.R.I.B.A., Architect.



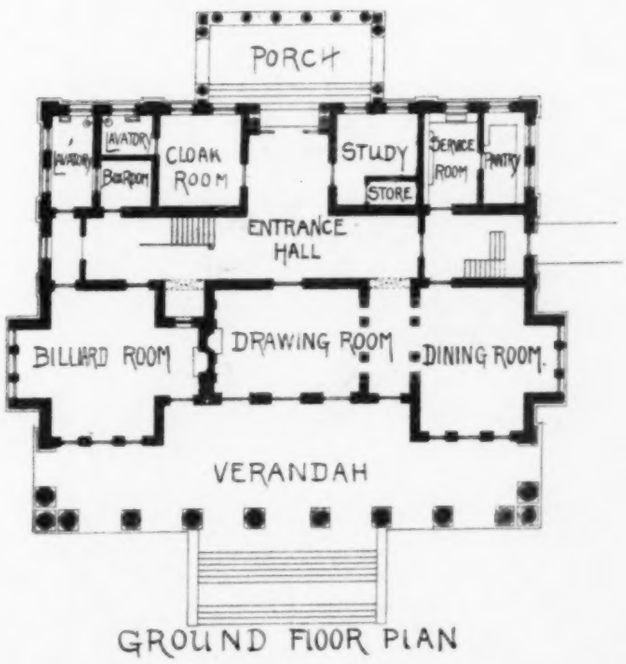
NEW COUNCIL SCHOOL. - HUMBERSTONE. -



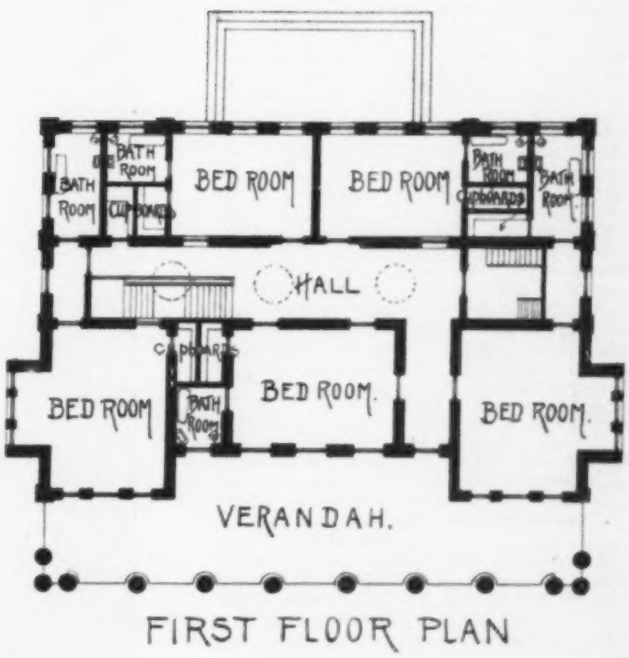
PLAN.

Mr. Ernest G. Fowler, M.S.A., Architect and Surveyor to the Leicestershire County Council.

[This building has been designed to allow of extension to an almost unlimited extent. Eventually manual and housecraft rooms will be added. The present plan provides for 200 children The school is to take the place of an existing church school which has become too small for the rapidly increasing garden village. The materials are to be picked common brickwork, brindled tile roof, woodblock floors, except corridors, which will be of granolithic. The site is two acres in extent, and provides playing fields and school gardens.]



GROUND FLOOR PLAN



FIRST FLOOR PLAN

Residence at Alipore, Calcutta.

Mr. Vincent J. Esch, C.V.O., F.R.I.B.A., F.S.A., Architect.

BOOK REVIEWS.

Manual of Reinforced Concrete. By Charles F. Marsh M.Inst.C.E., and William Dunn, F.R.I.B.A. Fourth edition. 1922. London: Constable & Co. Price 21/- net.

This compact volume of convenient size for a pocket edition, measuring 4½ in. by 6¼ in. by 1¼ in. thick, purports to present a clear printed collection of standard information derived from various sources and from the author's own experience, contained in six parts or chapters, together with 207 diagrams and 79 tables, and is furnished with a copious index well-compiled and evidently personally prepared by the authors themselves. The letterpress contains practical remarks upon construction and upon material employed. The first chapter deals with Portland cement and is very practical, especially in its references to the adoption of the rotary kiln for calcining the raw material so that the whole of the clinker may be uniformly burnt by the regularity of temperature produced. It is shown that the surface of the grains of sand should not only be clean, but preferably rough, not smooth, in order that the cement may adhere to these grains. Unless reinforced concrete be absolutely non-porous, the use of sea water may have a prejudicial action on the reinforcement. Waterproofing, fire resistance, also expansion and contraction and effects of sewage upon concrete and of electrolysis are dealt with, it being pointed out that plain concrete is in no way affected by the action of electric currents.

In alluding to loads the bearing power of piles should under various conditions be determined by actual experiment, and the form of the base and footings to a retaining wall are duly considered. The calculations furnished by the authors embrace all the considerations they would themselves apply in any reinforced concrete work, but while the tables and diagrams of Part VI are most valuable, the information contained therein is such that it need not have occupied pages 433 to 442, as any student competent to apply the calculations of the previous parts in the treatise would be conversant with the general information given in Part VI.

Structures in reinforced concrete were considered by many engineers to be less liable than other structures to damage from vibration when properly constructed. The material admitted of treatment in a variety of sections and was suited to circumstances in which the space to be occupied needed to be minimised, and where, under certain conditions, the cost had to be kept down, but needed expert supervision to ensure a monolithic structure which was its chief recommendation. The concrete must be both made and applied sufficiently rich or dense to procure nonporosity, which was essential to durability. Steel encased in concrete was not true reinforced concrete, in which the metal and the concrete were designed to bear a definite ratio to one another for tension and compression respectively. Machine mixing produced the best results and gave greater homogeneity than hand mixing.

Victoria and Albert Museum Department of Woodwork. The Panelled Rooms. II. The Clifford's Inn Room. London: H.M. Stationery Office. Price 1s. 6d. net.

The panelling and carved woodwork saved from the demolition of a house in Clifford's Inn form the subject of a small publication issued by the Victoria and Albert Museum.

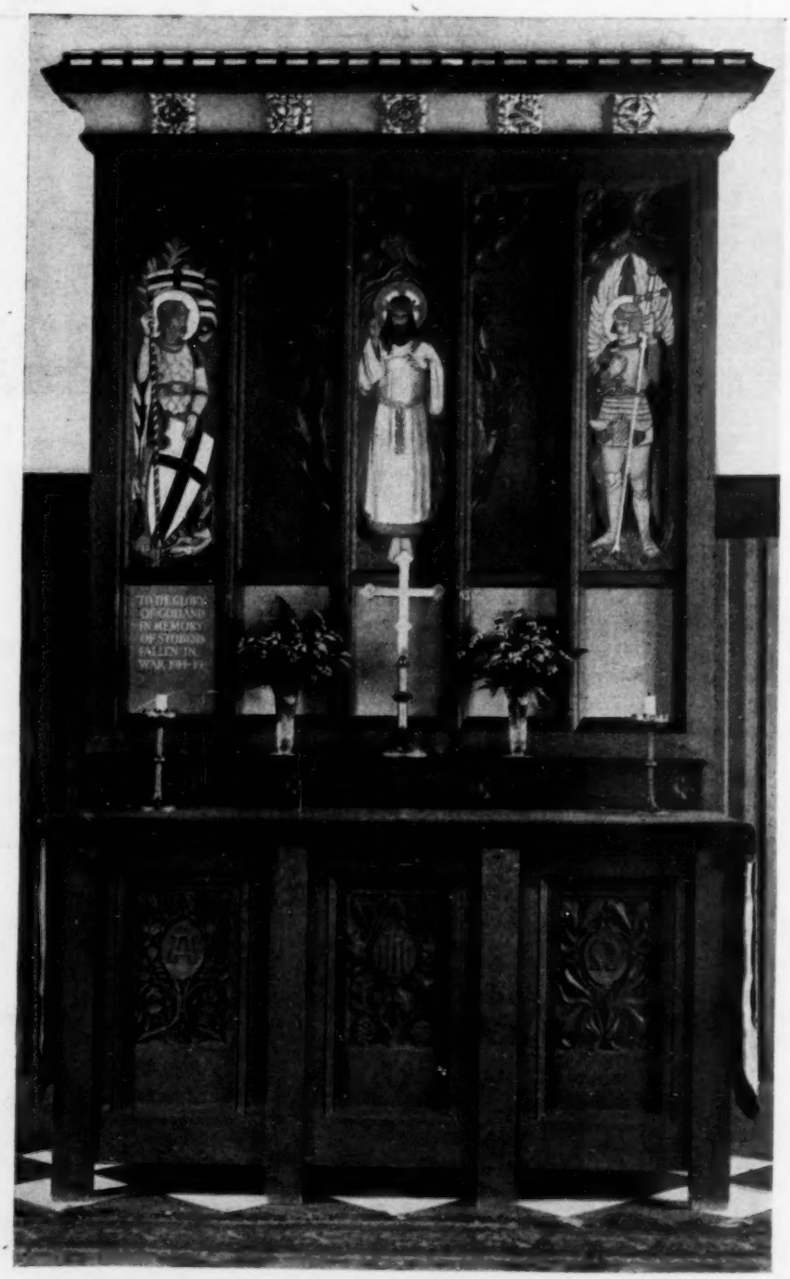
For purposes of preservation and exhibition the panelling has been assembled into the form of a complete chamber in the museum galleries, and although this differs slightly in form from the asymmetrical shape of the original room, it permits of a far better impression being obtained than would have been possible from a collection of disjointed details.

The history of the panelling is traced in the publication and a date of 1686 to 1688 is assigned to the work, which adheres to the style of Sir Christopher Wren and Grinling Gibbons. The carving is not, however, quite so realistic as is usually associated with the latter master. The work marks a phase of the Renaissance in England not quite so strictly in accordance with the Palladian rules as that introduced by Inigo Jones or that which was to follow in the Early Georgian period, when architecture was designed and criticised in the light of increased knowledge of the Classic orders of columnar architecture. The panelling was set out, however, with a feeling for the general balance of the room as a whole, and the panels themselves are large in scale contrasting in both these respects with the work of the earlier Renaissance of Elizabethan times.

The publication is illustrated by five photographs and by a series of seven measured drawings by Mr. A. E. Bullock, A.R.I.B.A., and contains an extract from the genealogy of John Penhallow (whose arms are carved on the mantelpiece), together with a list of works of reference.

ALTAR AND REREDOS AT STEPNEY.

The chapel is part of the Training College for Lay Workers at Stepney, erected for the S.P.C.K. from the designs of Messrs. Young & Hall, FF.R.I.B.A., some years ago. The altar and reredos were designed by Messrs. Young & Hall; the decoration of the latter was carried out recently, as a memorial to students who fell in the war, by Mr. Macdonald Gill, who thus describes his work: "The intermediate oak panels have been painted blue, upon which has been placed in the centre, Christ as the Good Shepherd, and on either side the figures of St. George and St. Michael respectively. These are in full colour, with gold and silver embellishments. The cresting has been picked out in colour, the carved pateræ being blue or gold. The decoration was designed and executed by Macdonald Gill, assisted in part by Gladys Evans." The carved panels in the altar were executed by the wife of the sub-warden from the architects' full-size drawings.



Altar and Reredos in the Chapel of the Church Training College for lay-workers, Stepney.

Messrs. Young & Hall, FF.R.I.B.A., Architects.

THE ILLUMINATING ENGINEERING SOCIETY.

Under the auspices of the Illuminating Engineering Society a joint meeting with members of the Royal Institute of British Architects and the Surveyors' Institution was held at the Royal Society of Arts, 18, John-street, Adelphi, recently, when a paper by Mr. P. J. Waldram, F.S.I., and his son, Mr. J. M. Waldram, B.Sc., on "Window Design and the Measurement and Predetermination of Daylight Illumination" was read. Mr. D. R. Wilson, of the Factory Department of the Home Office, presided.

The Chairman said it seemed to him that the question of daylight had been unduly neglected in favour of artificial light. One reason was that probably in dealing with the latter they were dealing with production, but with the former they were dealing with adaptation, and it was quite possible that production was a great incentive to research work. Daylight illumination was a matter primarily for architects and surveyors, and he hoped that the representatives of the two organisations present would give them the benefit of their views.

Mr. P. J. Waldram said the main object of all investigations into natural illumination was to enable the designer to perform with confidence three operations which at present were directed mainly, if not entirely, by guesswork and rule of thumb:—(1) So to design windows that interiors were adequately lit for their intended purposes without excessive glass area; (2) to determine whether any existing interior was adequately lit; (3) to predetermine the degree to which any proposed obstruction would affect the natural lighting of a given interior. The problems of natural illumination were intricate, but their difficulties were apt to be unsuspected. Even to-day it was somewhat difficult to find an architect or a builder who was not convinced that he knew all that it was necessary to know about illumination by windows. It was still more difficult to find anyone who did. Although the measurement and predetermination of natural illumination would appear to be a matter for the architect rather than for the illuminating engineer, yet the latter could not afford to disregard it. If he was to make good its deficiencies adequately, he must have an accurate working knowledge of its nature and its weaknesses; and as a professional man he ought to be in a position to advise his clients how best to utilise the cheapest and the best of all illuminants.

In 1907 there was no illumination-photometer capable of measuring daylight; its huge fluctuations were almost unrecognised, even by scientists, and the utter impossibility of estimating its varying intensity by the human eye was practically unknown. From the meagre data available certain rules for schoolroom windows had been deduced by continental scientists, but no co-ordinated theory on the subject had been published, and popular interest in it was small. To-day we had Government reports giving the results of a comprehensive series of daylight measurements taken in all classes of factories both by factory inspectors and by scientific investigators from the National Physical Laboratory, carefully collated and published with a clear and concise epitome of accepted theory. Legal disputes with respect to obstructions to light were frequently decided upon undisputed measurements, or settled out of Court; and the unedifying spectacle was now seldom seen of eminent and patently honest professional witnesses flatly contradicting each other upon matters of opinion and observation. That was not to say that, merely because methods of measuring daylight had been devised and had proved valuable, our knowledge was either complete or adequate for ordinary requirements.

The only existing methods for predetermining windows were certain well-known rules which purported to determine the area of glass as a proportion of the floor area lit, possible modified by keeping the window head at a minimum height determined by the depth of the room. Such rules, if correct for cases in which the obstruction of neighbouring buildings was negligible, must necessarily be incorrect for obstructed windows, for any obstruction necessarily altered the essential properties which enabled a window to illuminate a room. These were:—

(A) The area, angular height and possibly the aspect of the visible sky at the back of the room or at the worst lit position in the room—which determined the minimum daylight factor due to direct light from the sky; and

(B) The amount, and possibly the aspect, of the visible sky subtended at the window, which, in conjunction with the colour of the walls and ceiling, determined the contribution to be made to the minimum daylight factor by diffusely reflected light. The term "visible sky" included, of course, due allowance for any obstructions which could appreciably reflect light.

In the large majority of cases windows could be designed with much the same confidence as that which they should have in sailing a boat in the middle of a tidal estuary without fear of running aground. It was only when they got into the shallows that they felt the need for charts, soundings and tide tables. Except in crowded towns, it was generally not difficult to light all interiors adequately by means of windows of moderate size and height without spoiling the balance of fenestration in adjoining elevations or incurring the disadvantage of excessive glass area. That was rather apt to engender in the designer a misleading sense of ability to deal with all situations which might occur. It was only when he encountered cases of severe sky obstruction coupled with deep rooms and the necessity or desirability of retaining a small window area that he felt the need of more exact methods of predetermining daylight problems, for a mistake, once made, was generally irrevocable.

The object of the paper was to supply that want. It was assumed that the dimensions of the interior, the window and the obstructions had all been fixed, and that it was necessary to ascertain whether those conditions would result in an adequate daylight factor at the worst lit point, or at any number of doubtful points in the interior. It was thus at present mainly a trial and error method; and although with its help it might prove to be possible at a later date to formulate general rules giving the window dimensions necessary under any combinations of circumstances, the labour involved in arriving at such rules would necessarily be heavy.

The following summary of the operations necessary in any particular case would serve to indicate their simple character:—

(1) *Direct Light.*—From the worst lit positions in the given interiors, or from any number of doubtful positions, the sky visible through the window, windows or skylight over any obstructions which might be present was plotted by its angular co-ordinates on a suitable measuring diagram, representing the quarter sphere of visible sky. The divisions on the diagram were so adjusted as to represent by the area of any piece of visible sky its power of illuminating a surface at the point under consideration. That plotting could usually be done from the plans and sections, but the rather tedious work involved could be greatly reduced by the judicious use of simple trigonometry.

The direct light factor was then obtained by comparing the area of visible sky with the area of the diagram.

(2) *Diffused Light.*—To the above must be added the contribution made by diffusely reflected light. They certainly required much more and much better data of that, but it could generally be estimated as lying between the limits of a 1 per cent. sill ratio in the case of exceptionally shallow rooms with large windows and nearly white walls, about 0.4 to 0.5 per cent. in ordinary rooms with light walls and ceilings and small obstruction, and well below the "grumble" point of 0.4 per cent. sill ratio when the obstruction was material.

It appeared to be approximately constant over all parts of an ordinary room and might be estimated by means of a diagram which was described in detail.

(3) *Sunlight.*—The hours of possible sun which could enter the room could be ascertained by diagrams and methods described in an appendix to the paper, which had already appeared in the Transactions of the Surveyors' Institution.

If the result proved to be insufficient or excessive, the diagrams showed at once in what particulars any of the assumed conditions could most effectively be varied. It should, perhaps, be emphasised that methods of measurement only served to assist their judgment—they would not do their thinking for them. However great, therefore, might be the degree of accuracy to which they might bring methods of measuring and predetermining daylight, they could never take the place of intelligent observation, experience and judgment, for no two cases ever presented the same features.

The undue length of the paper might perhaps be forgiven when it was realised how wide was the gap between the mere measurement of daylight illumination in existing rooms—which was the limit of their present published knowledge—and any accurate solution of every-day problems, such as window design, especially if the methods adopted were to be simple and straightforward. The paper did not purport to lay down dogmatic rules as to how that gap should be bridged; it merely suggested a simple method of bridging it.

It was often necessary to consider how existing bad conditions could be improved.

Although in this country they were still protected from the more ghastly results of sky-scraper building, yet cases of bad lighting could undoubtedly be found in many of their older industrial buildings. The typical modern factory had usually plenty of glass area. Some, in fact, appeared to have too much, the glazed openings being unnecessarily large, and extended to positions where no useful light could enter. It was quite possible to reduce the solid walls of a factory to a point where even exorbitantly expensive warming and ventilating plant would not suffice to keep the rooms reasonably warm in winter and healthily cool in summer.

But even those evils were preferable to the poky and often dirty little windows of the typical early Victorian factory. One found only too frequently in palatial blocks of City offices back rooms devoted to clerks and typists, who had no trade union and no factory inspectors, most inadequately lit from light wells which the architect had been tempted to reduce to insufficient dimensions for the sake of additional floor space. It was true that such light wells were generally faced with white glazed bricks and occasionally they were cleaned. But, even if such glazed walls could reflect 100 per cent. of the light incident on them and were kept perfectly clean, they could never equal the sky which they replaced. A glazed wall facing south would certainly be in a position to reflect light from a portion of the sky which, on fine days, was of a greater average brightness than that which was opposite to a window facing north. But it was on dull days, not on sunny days, that the mischief was done. Even the best glazed facings waste some 20 per cent. or more of the light which fell on them in the process of reflection when clean, and considerably more when neglected. Also they could generally receive light from only a small portion of the sky, and were therefore necessarily much darker than the sky itself. In addition, they were often cut up by windows, the glass of which reflected practically no useful light.

The improvement of cases of bad natural lighting was invariably attempted on the general lines of making the most of what sky was left. Light coming from the sky at too steep an angle to enter the window, or at least to penetrate far into the room was caught on inclined mirror reflectors placed outside the window and directed more or less horizontally into the room. The same effect was obtained by the use of prismatic glass either glazed in the window sashes or used in the form of independent outer sashes inclined at a suitable

angle to effect the desired refraction. Much care had been directed to the production of those prismatic glasses, of which some excellent kinds (Luxfer, Pilkington's, &c.) were on the market, and when properly installed they could undoubtedly effect remarkable improvements in the lighting of basements and of rooms at the bottom of deep light wells. Where light was required mainly in a horizontal direction as in basement stores, they were excellent; but for clerical work the unnaturally horizontal direction which they gave to the light and their tendency to specular reflection and glitter was undoubtedly bad, and rooms lit with them should always be so arranged and furnished that the occupants should normally work with a side light.

Discussion.

Mr. J. W. T. Walsh, of the National Physical Laboratory, said they were indebted to the authors of the paper for the new formulas they had explained that evening. Strictly speaking, it was, of course, accurate only for the centre of the window, but he had been interested to investigate the accuracy of the approximation involved. He had found by comparison of the results given by it and by the very complicated exact formula for a given case, that the difference was surprisingly small. He would like, however, to criticise one point which they had made with regard to the new method of arriving at the daylight factor which they had suggested. He had had the pleasure of making a large number of daylight factor measurements in different factories and other places, and he was afraid that if he relied upon the method of measurement suggested by the authors he would not have been able to make accurate measurements in all cases, because one came up against such problems as the impossibility of opening the window or of gauging the amount of dirt on the glass. Some rooms also had nothing but a skylight.

Mr. G. F Collinson, F.R.I.B.A., asked whether there was any foundation for the suggestion that the light they obtained outside the sun's rays was often stronger than the light in the sun's rays.

Mr. R. Langton Cole, F.R.I.B.A., asked Mr. Waldram what was meant by his statement that one per cent. of light was diffused. He had difficulty in accepting the fact that measurements of a circular sky could be accurate.

Mr. J. MacIntyre (H.M. Office of Works) said architects were faced with great difficulties in regard to lighting design, but he was not sure the work was generally done in the best possible way. He hoped that the subject which had been introduced that evening would be followed up by architects, and that there would be a cessation of design of buildings based on the methods followed in the past, even in regard to front elevations. He regretted that the authors had not dealt with the question of light wells.

Mr. A. Blok raised the question of the loss of lighting through dirt on windows, and said it would be interesting to know what the losses amounted to under particular conditions. As a result of experiments he had ascertained that the illumination in a room in a selected locality was 25 per cent. greater with the windows clean than at the end of two months of gathered dirt.

Mr. P. Waldram, replying to the discussion, said that the results of Mr. Walsh's tests of the new formula were a very considerable relief to his son and himself after some months of wondering how their new methods would behave under the searching and exact tests of the National Physical Laboratory. There was, as stated in the paper, a small negligible error involved if the formula were applied to an entire window opening, but it was not suggested that this should ever be done. The diagram did it for them and, in doing so, corrected even this small error. He quite agreed with Mr. Walsh that unusual conditions were sometimes found which would prevent the adoption of the suggested method of measuring existing buildings and might force one back to the method of taking the outside balancing measurement on the roof or at an unobstructed window. But there were many more cases where neither an accessible roof nor an unobstructed window were available and these cases could only be measured by direct observation of the visible sky, which the authors considered to be the more accurate method.

The phenomenon referred to by Mr. Collinson was probably the stronger light received from white clouds than from blue sky. The actual rays of the sun were the most powerful illuminant we had. In reply to Mr. Langton Cole, the proportion of the total light in a room which was contributed by diffuse reflection from walls and ceiling might, under favourable conditions, amount to as much as a one per cent. sill ratio; which would be equal to the light on the worst desk of an elementary classroom.

He regretted that the unavoidable length of the paper precluded any consideration of the somewhat difficult subject of light wells referred to by Mr. MacIntyre. Mr. Blok's figures for absorption of light by dirt on glass were quite reasonable. Clean sheet glass of good quality absorbed about 7 per cent. to 10 per cent., according to its thickness, but these figures rapidly increased with degrees of dirtiness which would not unduly shock a careful housekeeper.

Mr. J. M. Waldram, replying to Mr. Langton Cole's query as to the correctness of the representation of the sky by a hemisphere, showed that it could be represented equally well by an infinite flat plane or by any other surface if due allowance were made in the formula derived.

The Chairman announced that the next meeting would take place on April 24, when a paper would be read by Mr. L. Gaster on the Lighting of Printing Works.

HEATING AND VENTILATION OF BUILDINGS.

In opening a series of lectures to architects and their assistants recently, at University College, on the subject of heating and ventilation, Professor A. H. Barker said that it was somewhat delicate to address architects as to the relations which should exist between them and heating and ventilating engineers; but he would venture to do so, as he thought the situation called for some comment. In his view, unless the architect possessed a special and unusual amount of knowledge on the subject of heating and ventilation, he was taking on his own shoulders a serious responsibility in being sole professional adviser to his client upon the matter. Of course, if the installation was a simple one, it would be hardly necessary for him to call in a consultant.

Experience had shown that architects were inclined to deal with complicated heating and ventilating installations with such assistance as they could obtain from firms of contractors who specialised in that class of work, with the result that nine out of ten, and probably nineteen out of twenty of the installations which had recently been installed in important buildings were such that, if they were brought to him as a building owner, he would decline to accept. Frequently he was called in where that procedure had been adopted and found the existing plant very bad and giving very poor results. As to the training a man should have to deal professionally with this work, he alluded to the three years' course provided for at University College, the curriculum of which embraced electrical engineering, including electrical design and a general knowledge of mechanical engineering, as well as a knowledge of building construction sufficient to fulfil the requirements of a heating and ventilating engineer.

Professor Barker condemned the course adopted by so many architects of calling in half-a-dozen or more different firms of contractors who specialised in heating and ventilation work. Much time was spent by those firms in preparing schemes, and it was really impossible for an architect to say which of those was best. If six such schemes were handed to him, as frequently happened, he was generally unable to say which was best, and usually it ended in the scheme being abandoned and a fresh scheme prepared. The design of a heating and ventilating installation by an architect was analogous to a private owner who contemplated building a house calling in a builder and telling him roughly his requirements and the builder carrying them out as best he could. It needed little imagination to know that the result would be disappointing. He advocated close collaboration between the architect and the heating and ventilating engineer, but as to the adequacy or otherwise of a scheme the engineer should be the sole judge and the responsibility of deciding whether the equipment was in all respects up to specification should be solely his.

The City Churches.

An invitation has been issued by the Bishop of London to the incumbents of the city churches to meet him in conference at Church House, Westminster, on April 26, to discuss the Union of Benefices and Disposal of Sites Measure. The Bishop will hear any objections that the City incumbents have to make to the measure, and his visitors may submit a strong protest against any proposal that will facilitate the destruction of any of their historic churches.

War Memorial in gilded bronze, erected in Chorlton Road Congregational Church, Manchester.

Designed and executed by Mr. Herbert Maryon, Reading.

THE HOUSING BILL.

The text of the Housing Bill has now been issued, and it is a measure of considerable complexity with reference to the existing legislation which will require careful analysis, which we hope in due course carefully to consider, and so to review as to make the purport of the provisions of the new Bill clear. The object of the present note is only to refer to the one question we have already called attention to—the assistance proposed to be given out of the rates. This question is dealt with in clause 2 of the present Bill as follows:—Local authorities for the purposes of part III of the principal Act (the Act of 1890) may in accordance with proposals submitted by them to the Minister of Health and approved by him promote the building of houses by giving assistance in respect thereof in the manner provided by the Bill. The houses must be of the type and size specified: (a) two storied houses with a minimum of 620 and a maximum of 850 superficial feet, or (b) flats or one storied houses with a minimum of 550 and a maximum of 780 superficial feet (see clause 1 subclause (2). The assistance given by the local authorities under clause 2 may be (a) grants by lump sum after the completion of the houses, (b) an undertaking by the local authority to refund, during such period as may be specified in the proposals, to the person by whom the rates on any house are payable the whole or any part of the rates paid by him in respect thereof, (c) an undertaking to provide during such period as may be specified in the proposals any part of the periodical sums payable by a person to a building society by way of interest on or repayment of advances made to him by the society for the purpose of building a house or purchasing a newly constructed house.

Before approving proposals under this clause the Minister has to be satisfied not only of the size and type of the houses to which assistance is to be given, but that there is need of such houses within the area of the local authority and that such need cannot be met without assistance under this Bill.

Before the Bill was introduced we commented on the extreme undesirability of any discrimination being made in the rates in favour of a class, and there is little to add to what we have said upon this point except that such a proposal, objectionable as it would be in any form, appears to us to be presented in this Bill in the most objectionable form possible.

A discrimination in favour of persons or classes in either taxation or rating is an unheard-of experiment; it is capable of all kinds of abuses, and is a precedent which is capable of being extended to any class quite apart from housing. It is a very dangerous expedient for any Government to adopt quite apart from the details of the measure. Presumably under this Bill the approval of the Minister will be given to the class of house, but it is not apparent what latitude the local authority may not possess as to making rebates to the individual, and what can be more objectionable than even the suspicion of discrimination as regards the rates to individuals? The rebate is to be made "to the person by whom the rates on any house are payable" and "in respect of a whole or any part." Is discrimination to be made by the local authority as to the extent of the rebate? Because if so, this again is most objectionable and may lead to suggestions of favouritism.

Then there is the point we have already made in a previous article that the assistance to housing by such a proposal seems too indirect. The exemption from rates is given to the occupier or person liable to pay them, but the house may change hands almost immediately, and if this form of relief is granted at all the relief should surely be secured to the person providing the house, not to the person liable at any time to pay the rates. The scheme appears as impracticable as it is objectionable, and we trust that it will certainly be eliminated from the Bill in its passage through Parliament.

Clause 5 contains a provision which apparently applies to larger houses converted into flats, when a rebate may be made of the difference in the rates on the house as converted and the rates on the original rateable value. This may not be open to the same objections, but we defer consideration of this point to a more detailed analysis of the whole Bill.

NEW HOUSES AND RATING.

Before the new Bill was introduced it was foreshadowed that the Government proposals would include three propositions:—(1) A subsidy of £6 a house per year for twenty years, or a capitalised sum of £75 per house up to the end of 1925; (2) exemption of houses built under the subsidy scheme from local taxation for a period of years; and (3) the modification of the Small Dwellings Acquisition Act to permit of loans being made to private individuals for the erection of parlour houses—the subsidy only to apply to houses of the non-parlour type and the exemption from rates only to apply to houses of this type and for a period of five to ten years.

The project of exemption from rates finds favour in certain quarters, but it is upon this point that we wish to comment, as we feel that if inequality in rating is introduced this will be a much more serious matter than the inequalities of rent brought about by rent restriction and the last error will be worse than the first.

Equality in rating is a vital principle; a part of the well-tried and established law of the land, and it forms the basis of all assessments. Thus, in the recent case, Double *v.* Southampton Assessment Committee, which we commented upon in our issue October 27, 1922, the Lord Chief Justice said: "It is a principle of the law of rating that all properties of the same class must be valued by the same method of assessment." The proposed exemption of the non-parlour new houses would differentiate between properties of the same class, the old and the new, and the effect would be to subsidise the new properties at the expense of the occupiers of existing houses of the same class. In some cases this housing subsidy will be paid by occupiers, but in others by the owners of this class of property, who have contracted to pay the rates, and the amount of the subsidy will vary in every district; it will be small where the demand for new houses is small and great in congested districts where the demand for new houses is large.

It is a first principle in both taxation and rating that absolute equality should be maintained as between persons or property of the same class, and a tampering with this principle will have unlooked for results in the future, and as in the case of rent restriction, an expedient devised to meet a temporary emergency may have long continuing results. The proposal in our opinion is vicious in itself, but coupled with the continuance of rent restriction it will produce even more inequitable consequences. It is desired to stimulate building, and the subsidy no doubt will assist the actual builders of houses to provide houses at the national expense at a lower cost or rent, but what of the indirect subsidy by exemption from rates?

This subsidy will be paid by the other ratepayers be they owners or occupiers. Many of the occupiers are already paying uneconomic rents, and the owners are compelled to keep them as statutory tenants at a loss, while in other cases these same owners are compelled to demand increases of rent to meet increases in rates, and thus a class of tenants subsidised as to rent will be called upon to contribute a subsidy to the new houses, a subsidy varying in amount in each district. Then what will be the effect of this subsidy of exemption from rates on the main question of housing? Its effect must be wholly indirect, for it can only stimulate the provision of houses by enabling those who build them to offer them as rate free on more advantageous terms; thus a new class of tenant will be introduced, the tenant paying the new rent on an economic basis but rate free at the expense of his neighbours. The new house is rent restriction free, and this scheme is only another method of reducing the rent of a rent restriction-free house to that of a restricted house. All such methods must be bad, and they come from a desire to shut the eyes to a fact that housing like other things has become more costly since the war, and must be paid for. Food subsidies existed during the war, but had to be abandoned during the still more arduous times that followed the Armistice, but the cost of housing has never been faced and all sorts of expedients have been resorted to to enable people to pay less than an economic rent. But the worst expedient of all would be one which interfered with the principles which have always applied, and must apply to, the equity of taxation and rating, and far better than that is a national charge levied on equitable principles to get over a temporary difficulty.

The gradient between the rents of the old and the new houses has been created by the Rent Acts, and it can only be surmounted by a gradual relaxation of rent restriction by degrees, and by the provision of more houses. The first remedy has been postponed for a further period of at least two years, and the present proposal to exempt new houses from rates is only a makeshift way of levelling the rents of new houses to that of the old in a manner not so apparent and therefore less unpopular, but far more objectionable than that proposed by the Rent Committee.

THE GOVERNMENT HOUSING BILL.

Sir Kingsley Wood, M.P., discussing the provisions of the Government's Housing Bill with a Press representative, said they did little to relieve the serious housing difficulties of the middle class. Unfortunately the forecast made that the State contribution of £6 per house payable annually for twenty years to local authorities was to be confined to the smallest type of house was only too true. That limitation adversely affected not only the middle class but certainly the working man. In respect to the working man with a large family it was difficult to understand how he could live in anything approaching comfort in a non-parlour house, and the best that could be said was that the non-parlour house was better than the unfortunate conditions under which so many were living to-day. The provision permitting advances to be made whilst a house was in course of construction, and increasing this power to £1,200 houses, was certainly valuable, as was the clause permitting the Health Minister to override local by-laws that were unreasonably impeding building. That, however, did not meet the middle-class need, and there were large numbers who could not afford to embark on purchase schemes. It was unfair that this hard-hit class should not receive full assistance from the State. It was argued that private enterprise could be trusted to look after them, and that housing for the middle classes would be an attractive proposition to the private builder. If it was it could be certain it would be at higher prices or higher rents, but in fact there was little evidence to support this view. Again, it was said there was only a limited amount of money available. That could be well understood, but it should be fully available for working class and middle class alike.

Interviewed by a Press representative, Mr. Edwin Evans, President of the Property Owners' Association, stated that he regarded the proposals of the Government's Housing Bill as a step in the right direction.

THE WEEK IN PARLIAMENT.

Westminster, Wednesday.

The New Housing Bill.

Mr. N. Chamberlain, the Minister of Health, introduced his new Housing Bill on Wednesday. The second reading will be taken on Tuesday, April 24.

The Labour Party have given notice that, on the second reading of the New Housing Bill, they will move the following amendment:—"That this House cannot assent to the second reading of a Bill which is inadequate to deal with the present housing shortage, ignores the difficulty of land purchase and transfer, fails to provide the means of securing a sufficient supply of building materials at reasonable prices; throws an excessive financial burden upon local authorities and interferes unnecessarily with their administrative powers, fails to reduce the burden of interest imposed upon dwelling-houses by the present financial system, and provides only for an unreasonably small type of house."

Ancient Monuments.

On a vote of £1,281,100 for expenditure up to March 31, 1924, on public buildings in Great Britain, Sir J. Baird, the First Commissioner of Works, referring to ancient monuments, said that these were handed over to his Department under the Ancient Monuments Acts of 1913. He did not think this country was yet so poor as to neglect ancient monuments which had played so large a part in our history. The monuments in London were mostly not very ancient, and they were not under the charge of his Department. Among the important ruins which had been taken over recently were Norham Castle; White Castle, Monmouthshire; Spofforth Castle, Yorkshire; Ewloe Castle, Flintshire; Warkworth Castle, Northumberland; Huntley Castle, Aberdeenshire; Incholm Priory, Fife; Netley Abbey, Hampshire; Furness Abbey, Lancashire; and Grosmont Castle, Monmouthshire. No doubt there were others equally interesting.

Local Authorities' Housing Schemes.

Mr. Cooper Rawson asked the Minister of Health whether he was aware that certain local authorities were continuing building schemes; if so, what were the conditions, if any, under which he had given sanction for such schemes; and if any provision was made for levying any portion of the cost on local rates.

Mr. N. Chamberlain said he was aware that a number of local authorities were proceeding with the erection of houses in anticipation of the new Housing Bill and the fourth sub-clause of clause 1 of the Bill provided that local authorities would not be prejudiced as regarded the subsidy on account of their having so acted. Any loss on such schemes beyond the amount of the Government subsidy would, of course, fall on the local rates.

Scotland's Needs.

aptain Elliot informed Mr. Stephen that, according to the details furnished by the local authorities when submitting schemes in terms of Section 1 of the Housing, Town-Planning, &c. (Scotland) Act, 1919, the new houses which the local authorities in Scotland considered necessary to meet the needs of their districts included 22,296 houses to replace houses then occupied which should be closed and demolished, and 13,932 houses to rehouse persons who would be dispossessed by improvement and reconstruction schemes under Parts I and II of the Housing of the Working Classes Act, 1890. From returns received by the Scottish Board of Health from local authorities in Scotland of proceedings under the Housing Acts during the year 1922 it would appear that 7,280 houses were, during that year, reported as unfit for habitation. In 970 of these the defects were remedied, while Closing Orders were made in the case of 60 houses, the defects in 27 of which were subsequently remedied. In Glasgow the Medical Officer of Health had reported that 13,195 houses at present occupied were not reasonably fit for habitation.

Empty Houses.

Mr. T. Thomson asked the Minister if he would favourably consider taking powers in his new Housing Bill whereby empty dwelling-houses might be both rated and taxed so long as they were withheld from occupation.

Mr. N. Chamberlain said he had carefully considered this suggestion, but he could not undertake to introduce legislation for the purpose in view.

Mr. Thomson: Cannot the Right Hon. Gentleman suggest some other means whereby use may be made of unoccupied houses?—Mr. Chamberlain: I shall have a proposal to make in the course of this Session with a view to making use of them.

Increases of Rent.

Mr. Pringle asked the Minister whether he was aware that certain landlords in West London, who had recently acquired large blocks of flats on the assumption that the Rents Restriction Act would be allowed to lapse, were endeavouring to obtain increases of rent on the ground that certain minor services hitherto rendered by charwomen, porters, &c., constituted service; and whether, in view of this fact, he would deal with the matter in the forthcoming Rents Bill in order that the tenants of these premises might be protected.

Mr. N. Chamberlain said he was aware of the practice referred to and was considering whether the matter could be dealt with by means of some clearer definition of what constituted attendance for the purposes of the Act or otherwise.

Building Prices.

Replying to Captain Terrell, who asked whether seeing that building contractors were now asserting that the cost of an average corporation-house built to-day would be only about one-third or one-fourth less than the cost twelve months ago, he would say whether within that period such houses had been built for about one-half the cost specified; and whether, in the opinion of the Department, there was any attempt to force prices up, Mr. N. Chamberlain said that tenders recently approved showed a fall of approximately 30 per cent. from the prices tendered in the early part of last year, and there was no reason to suppose that this reduction of tender prices differed materially from that which had taken place concurrently in the cost of building. There were not at present any indications of attempts to force up building prices.

Mr. McLaren asked the Minister if the terms of reference of the committee he was setting up to report on the prices of building materials would include the prices demanded for land; and, if so, would he give instructions to the committee to ascertain what the rateable value of the land was before purchase?

Mr. N. Chamberlain said the answer was in the negative. The position as regarded the acquisition of land by local authorities was, in his opinion, already adequately safeguarded.

Rate Exemption.

Mr. Darbishire asked the Minister if he was aware that since the tax-exemption ordinance was passed in New York on September 27, 1920, an official report stated that the following progress had been made in house-building there; in 1920: houses planned, 5,675, tenements planned 62, families provided for 8,588; in 1921: houses planned 14,780, tenements planned 824, families provided for 33,588; and in 1922, families provided for 114,330; and if he would endeavour to obtain through official channels a Report which would enable the House to consider the advisability or not of introducing similar legislation in this country?

Mr. N. Chamberlain said he had already obtained information about the American experience and he proposed to deal with this question of rate exemption when moving the Second Reading of the Housing Bill.

For some particulars of the result of the New York legislation see our issue for January 26, page 167.

The Subsidy.

Mr. T. Thomson asked the Minister whether, in view of the comparatively small difference in cost between the parlour and the non-parlour house, he would reconsider his decision to exclude the former from subsidy, and so give local authorities greater freedom in meeting their own needs?

Mr. N. Chamberlain said he could not reconsider his decision. The policy of the Government was to give the subsidy only for the small type of house, which had not been built in any considerable numbers in the last few years, and which was the least attractive proposition to private enterprise.

Mr. Thomson: Is the Right Hon. Gentleman of the opinion that the parlour house is being built in any considerable quantity at present? Mr. Houfton: Is he aware that there is a feeling of great indignation throughout the country, that the country is going to be covered with houses absolutely unfit for human beings to live in?

Mr. J. Jones: How does the Right Hon. Gentleman think that the working men who are trying to do their best for their children in the matter of education are going to provide them with rooms to sit in if they are to be denied the use of parlours?

Mr. Chamberlain: It must be remembered that the type of people we hope to accommodate in this type of house are now living in one or two rooms. There is considerable misapprehension if it is supposed that we are going to cover the country with houses unfit for human beings to live in.

Sub-Letting Tenants.

Captain R. Terrell asked the Minister of Health whether the Government Housing or Rent Restriction Act amendment proposals would deal with the evils of overcrowding by sub-letting tenants over whom the landlord had no control?

Mr. N. Chamberlain said he would prefer to reserve his statement on this and similar questions until the House entered on a discussion of the Bill which would deal with restrictions of rent and mortgages.

The Rating Bill.

Mr. Cecil Wilson asked whether any members of the Surveyors' Institution had been asked to give the benefit of their views to the Government in regard to the Rating Bill; what other bodies it was intended to consult; and whether assessment committees and overseers would have any opportunity, either collectively or otherwise, of expressing their views, and if so, at what stage.

Mr. N. Chamberlain said various persons, including some members of the Surveyors' Institution, had been informally consulted in regard to the Government's proposals for valuation and rating reform, and it was intended that all the principal associations of local and other authorities concerned should be given an opportunity of expressing their views at an early stage.

Railway Rates for Slates.

Colonel Ashley informed Mr. F. Hall that the present freight charges by rail for roofing slates and roofing tiles were those in force on the 14th of January, 1920, with an addition thereto of 75 per cent. plus a flat rate addition of 3d. per ton, with a maximum addition of 6s. per ton. No general percentage increase was made in goods rates prior to January 14, 1920.

Architect's Estate.

Mr. Andrew Bromley, of Fox Lodge, Lyminge, Kent, architect and surveyor (net personalty, £7,877), left estate value £12,422.

Bedford School Alterations.

The management of the Bedford Boys' Modern School are carrying out alterations to the present library to form part of the war memorial, which consists of new entrance doors in oak and the whole library panelled in oak, together with oak bookcases. The work is being carried out by Mr. S. Foster, of Kempston, Beds, under the supervision of the Surveyor to the Harpur Trust Schools, Mr. George P. Allen, F.R.I.B.A., 79, High-street, Bedford.

THE BUILDING TRADE.

NOTES ON CONCRETE.—II.

By A CONCRETE SPECIALIST.

Water in Concrete.

The water used for concrete mixing must be clear, and not contaminated with factory or other refuse. Sea water may be used, although it has a slight retarding effect upon the setting of the cement.

The quality of concrete is, however, usually influenced to a far greater extent by the quantity of water it contains than by the quality of the water. It is easier to make an apparently well-mixed concrete by adding sufficient water to produce a sloppy mixture than to make a well-mixed stiff concrete, and the sloppy mixture is usually placed into position with less labour than the stiff concrete. But these advantages of wet concrete are only obtained at the expense of the finished work, because the strength of concrete depends upon the ratio of water to cement. After a certain point is reached, the more water that is added to concrete the less is its strength. A concrete of 1 part cement to 8 parts sand and stone, mixed with no more water than is needed to produce a plastic mass, will be as strong as one composed of 1 part cement to 6 parts sand and stone if in the latter case the concrete is made wet enough to flow. Hence, by giving the necessary attention and slightly more labour to produce a stiff concrete it is possible to economise in cement. For concrete foundations, roads, and floors without reinforcement the concrete should be mixed with just sufficient water so that when rammed or punned it combines to form a compact mass. When concrete is required to flow through and under reinforcing bars it must obviously contain more water, and similarly when the concrete is elevated to a height and allowed to flow down chutes into position. The necessity for a more fluid concrete being granted, there should still be some restriction of the proportion of water to the minimum required to produce the necessary fluidity, otherwise there is a risk of the concrete being ruined by segregation of its component parts.

To the builder or contractor doing foundation work, concrete floors, and similar constructions it is impossible to emphasise too strongly the fact that whereas more cement per yard of concrete means greater strength, more water per yard of concrete means less strength. Reduce the water and save the cement is a good maxim.

Workmanship.

The one feature in connection with concrete work that is impossible of standardisation is workmanship, and under this heading are included mixing of cement and aggregates, consistency of concrete, and method of deposition. Probably the most frequent example of defective workmanship is seen in the use of too much water for mixing, because this is a means of reducing the labour required for concrete mixing. The disadvantages of excess water are dealt with in the preceding paragraphs.

Efficiency of mixing of the cement and aggregates is another important factor in the production of concrete. In some carefully-conducted American investigations made a few years ago it was found that, with all other conditions of testing (including proportion of water) being equal, methods of mixing adopted by various contractors might vary the strength of the concrete produced by as much as 70 per cent.

Except for small jobs, hand-mixing of concrete is becoming out of date on account of the lower cost of machine-mixing. So far as quality is concerned, no concrete-mixer can improve upon the result obtained from systematic and skilful hand-mixing, but really skilled hand-mixing is rare, and there is no doubt that on the average better concrete is produced by mechanical mixing. On the subject of hand-mixing there are various opinions as to the number of times the mixed materials should be turned before and after wetting, but no hard-and-fast rules on this point are desirable because much depends on the method adopted by the man with the shovel. It is better to continue the mixing both before and after wetting until the concrete is homogeneous in appearance and colour.

Speaking generally, concrete mixers of the batch type are more efficient mixers than those of the continuous type. In the batch mixers the materials should remain in the machine for 1½ to 2 minutes, and again a desirable standard of efficiency is that the concrete be homogeneous in appearance and colour. The proposed Standard Specification for concrete in the United States requires that the mixer shall have a peripheral speed of 200 ft. per minute.

A concrete that has been mixed without excess of water requires well punning or "rodding" in position (according to the space into which it is being filled) when being deposited, to secure density and freedom from cavities. The concrete should be finally in position before setting commences, otherwise the hardening will be delayed and possibly permanently injured. Concrete which has partially hardened before it is in position should not be used or mixed in with successive batches. No more concrete should be mixed than can be used before setting commences, and in this connection special care is necessary in hot weather, when the setting may occur in a much shorter period than under normal conditions. Concrete mixed before a meal-time stoppage should not be left until work is resumed before it is deposited in position.

Atmospheric Conditions.

Concrete attains its best results if it hardens in a warm, damp atmosphere. If the weather is cold and the concrete is exposed to a temperature below 40 deg. F. the rate of hardening is extremely slow; if the concrete be exposed while hardening to a hot dry atmosphere there is danger of the water required by the cement for hardening being evaporated, possibly spoiling the hardening and certainly tending to produce contraction cracks. The view seems to be held by some that concrete hardens by drying out, but with clean aggregates this is not true, and concrete during the first two or three weeks of its existence flourishes in a damp atmosphere. With loamy aggregates it is possible that the weakening effect of the loam is less noticeable as the concrete dries.

All cement generates heat during setting, and if this heat can be conserved in the concrete a satisfactory means of protection against frost is presented. To conserve this naturally-developed heat it is necessary to insulate the concrete, and for this purpose the usual timber shuttering is quite effective; but where there is no shuttering it is not sufficient merely to cover the exposed surface of the concrete with sacks. It is important that there should be no circulation of air over an exposed newly-laid concrete surface during frost, and suitable means of protection are by covering with close boarding, as used for shuttering, or with tarpaulin, so placed as to exclude draughts underneath but to leave a few inches between the concrete and the tarpaulin. For successful concreting in cold weather it is essential that the sand and aggregate should not be mixed in a frozen condition, and if the water used for mixing can be heated to about 80 deg. F., additional protection against frost is provided. As soon as concrete has hardened there is, of course, no further risk of damage by frost.

The protection of newly-laid concrete from heat and drying winds is as vital as protection against frost. In the first place, cement requires a moist temperature during the first week or two of hardening in order to attain its maximum strength; and second, if the water in concrete dries out while the concrete is new there is danger of the contraction—which is, of course, inevitable when most materials lose water—leading to cracks, because the concrete is not hard enough at an early age to resist without cracking the stresses set up by contraction. The cracks which occur in pipe-joints and in cement plastering are in most cases due to failure to protect the work from too rapid drying. Pipe-joints can be suitably protected by covering with damp sacks; timber shuttering is, of course, an adequate protection if left in position for at least a week; concrete floors or roads should be covered with damp earth or sand for a fortnight after laying, or alternatively kept damp by frequent watering. Plastered vertical surfaces should be protected by tarpaulin and frequently sprayed with water.

The setting of cement is hastened by heat, and when the temperature reaches 80 deg. F. or more in summer and the aggregate and mixing appliances are exposed to the sun, there is a possibility of the cement commencing to set in such a short time that it is difficult to mix and deposit the concrete without disturbing the setting process. There is no remedy for this except to keep the materials, including water, as cool as possible, to demand specially slow-setting cement from the manufacturer, and to expedite the mixing and final deposition of the concrete.

"THE BUILDER" COST OF BUILDING COMPETITION—No. 2

The Government subsidies to be granted for the encouragement of house-building still fail to meet the case of ordinary middle-class property, and private enterprise is left to struggle with the problem as best it may.

In fact, the granting of doles and subsidies in any department naturally complicates the difficulties of the unassisted, who have to face the inflated costs of building as well as being compelled to do their share in providing the subsidy, from which they reap no benefit, and private enterprise must be courageous indeed to undertake house-building in spite of this double burden. It is not possible to remodel conditions and place them on an entirely fair basis, and placid endurance of adversity may sometimes be the wiser course than to agitate fruitlessly for unobtainable reforms. But when the major difficulties cannot be removed it is still possible to seek improvement in matters of detail. Building is still costly, and, with the question of subsidies in the air, is likely to remain so; but it is to everyone's advantage that this great obstruction should not be complicated by unnecessary doubts and uncertainties. *The Builder* Cost of Building Competition No 2, for builders to tender for the erection of houses in accordance with the winning designs submitted in Competition No. 1, will, in any case, result in the publication of definite estimates in connection with a tangible commodity.

The quantities and other documents for the Competition No. 2 are in course of preparation, and the Assessor, Mr. Henry Vale, F.S.I., has been appointed to adjudicate upon the estimates submitted by builders and contractors. A premium of £75 will be paid to the builders submitting the best, but not necessarily the lowest tender for a house of each winning design.

Intending competitors should fill in and post the coupon on page xci of this week's issue.

BUILDING TRADE WAGES.

The negotiations between the building trade employers and the operatives broke down at 10.45 o'clock on Wednesday evening last week.

The following statement was then issued by the employers :—

The negotiations have been broken off, the employers having again asserted emphatically that there is no violation of the agreement on their part.

In view of the fact that the question of hours has been under repeated consideration since October, 1920, they notice with regret that the operatives' representatives, after three months' almost continuous negotiations, are apparently not empowered to effect a settlement upon wages and hours.

Recognising the necessity for an immediate settlement, the employers reaffirm their offer to refer the interpretation of the National Wages and Conditions Council Agreement, wages and hours, unreservedly to arbitration, provided such course is agreed upon immediately.

The operatives' negotiators were not in a position to accept the employers' offer, and the conference broke up without a settlement. The following were the terms of the proposals made to the employers by the operatives' representatives before the final decision of the employers was given :—

That we reaffirm our belief that the employers are violating the National Wages and Conditions Council Agreement by posting notices for a lock-out, and request the decision of who is right and who is wrong to be immediately referred for independent judgment to an arbitrator or court to be mutually agreed.

Re arbitration on the question of hours and wages, the operatives have decided immediately to arrange to take a vote of their membership as to whether—

(1) They will allow that the question of hours shall be decided by an arbitrator or arbitrators, provided that the national working week shall not be in excess of the employers' present proposal of forty-seven hours.

(2) They will allow the question of wages to be referred to an arbitrator or arbitrators on (*a*) for the operatives, the wages and conditions C.I.. document; and (*b*) for the employers, their present proposals.

We ask for the time to be given us to get this expression.

Both sides had interviews with Sir David Shackleton, the Chief Labour Adviser, on Thursday afternoon at the Ministry of Labour. The operatives' deputation included Mr. George Hicks (the president), Mr. Coppock, and Mr. Walsh, and they also had an interview with Mr. Ramsay MacDonald at the House of Commons. Later in the afternoon the employers' deputation, consisting of Mr. W. H. Nicholls, Mr. S. Easten, Mr. J. P. Cox (representing the branch trades), and Mr. A. G. White (the secretary), stated their case to Sir David Shackleton. It is understood that they intimated to Sir David that they had not modified their attitude in the least, and could only agree to arbitration if the entire issue, including wages, hours, and the interpretation of the agreement, is referred to the tribunal.

After he had heard their statements Sir David told both sides that he would lay them before the Minister, and probably would communicate with them the following morning.

A meeting of the members of the whole of the Federated Building Trade Employers in the London area was held on Thursday afternoon in the King's Hall of the Central Y.M.C.A., Tottenham Court-road.

Mr. W. H. Nicholls (president of the National Federation) and Mr. Stephen Easten (chairman of the National Wages and Conditions Council) addressed the members, and after several others had spoken the following resolution was carried, with one dissentient :

"This meeting endorses the action of their representatives in the dispute, and reaffirms its entire confidence in them, feeling sure that they will, in conjunction with their national colleagues, carry on the whole of the conduct of affairs in the best interests of the employers in the industry and the country generally, and pledges the association to support them to the fullest extent."

The Settlement.

An eleventh-hour settlement was arrived at on Friday on the terms contained in the following official statement :—

Conditional upon employers withdrawing their notices, it is agreed that interpretation of the National Wages and Conditions Council document and the question of wages be referred to the arbitration of an arbitrator to be appointed by the Lord Chief Justice, together with two assessors, one to be appointed by the operatives and the other by the building employers. The arbitration to be held on the above within seven days.

On the question of forty-seven hours' application, a ballot to be taken regionally by the operatives as to whether, failing a regional settlement, they refer the matter to the National Wages and Conditions Council for decision, and, failing the regions agreeing to this or the National Wages and Conditions Council agreeing to a decision, the matter to be referred to the above-named arbitrator and assessors.

The ballot on this question to be completed within one month; regional negotiations within seven days after completion of ballot; and, failing decision, National Wages and Conditions Council to decide or agree to refer to arbitration within a further seven days.

In the principle of the "spreadover" of the forty-four-hour week, it is understood that no extension of the present hours would apply in any region where unemployment in the crafts is excessive.

Each party agrees to conduct arbitration proceedings without legal advocate.

The Employers' Federation subsequently issued the following explanation of the second paragraph in the official statement :—

The question of forty-seven hours' application means employers' application for an extension to forty-seven hours per week in the summer time. The phrase as to "whether failing a regional settlement" means that the employers and the operatives in the regions shall meet with a view to arranging a forty-four, up to and including forty-seven-hour, or an equivalent, but not exceeding forty-seven-hour average summer working week. That is, it would be competent for a region to retain the forty-four-hour week or a greater number of hours up to and including forty-seven, or, alternatively, make such arrangement in summer work ng that would not exceed an average greater than forty-seven hours for the summer-time, or an approximate average of forty-four hours for the whole year.

It is officially stated that the Lord Chief Justice has selected Sir Hugh Fraser to act as arbitrator on the points at issue in the dispute. Sir Hugh, it is understood, will sit with two assessors to interpret the national agreement, and, if necessary, to decide the question of a wage reduction. Mr. A. G. Cameron has accepted the invitation of the operatives' side to act as their assessor, and Mr. Greenwood will act for the employers.

A settlement has been reached in the sectional strike in the building trades in the Eastern Counties. The employers agreed to withdraw all notices unconditionally, and work has been resumed throughout the area on the old rates, pending further discussion. It is anticipated that the Eastern Counties employers will now bring themselves into line with their national body, and that on the general question of wage and conditions the national agreement will be observed.

THE COST OF BUILDING MATERIALS.

In view of the statements made in the Press and elsewhere regarding the high price of certain building materials, the speech of the Chairman (Brigadier-General the Hon. F. C. Stanley), at the annual meeting of the Associated Portland Cement Manufacturers, Ltd., last week, contained some interesting statements with regard to the price of cement.

During the past year, he said, the total cost of manufacture of cement, including overhead charges and depreciation, showed an increase of well over 100 per cent. as compared with the pre-war cost (wages in the cement trade were 100 per cent. above pre-war), and this year they could not anticipate, owing to the increase in the price of fuel and many other items, much reduction in cost, while on the other hand selling prices had been further reduced, so that to-day's London price was only something like 60 per cent. over the 1914 figure. Cement prices, therefore, were not unduly high, having regard to the great increase in the cost of manufacture. Many incorrect statements had appeared about the selling prices of Portland cement in connection with the various schemes for building small houses. It had even been suggested that the price of cement was one of the factors holding up the building of these houses. It would be realised how absurd these statements were when he said that small houses on average did not require more than about five tons of cement in their construction, so that if the price of cement were reduced by a further 10s. per ton (which would absorb the full net profit) the cost would be reduced by £2 10s. per house, or less than 1 per cent. The trouble did not lay with the prices charged for cement, nor would it be solved if they gave cement away. The amount of direct taxation payable to the Government by the company on its profits was, in respect of the past financial year, very considerably more than the gross amount of dividend receivable by the ordinary shareholders. So that when the company was accused of fixing prices to the detriment of the housing schemes it should be realised that the Government, through taxation, was receiving from the company's income far more than the ordinary shareholders themselves were receiving, which fact pointed its own moral, and might well be taken to heart by that section of the community which seemed so anxious to foment trouble by misrepresenting the position of those engaged in the manufacture of building materials. The desire of the company was to stimulate the building trades as far as it could by selling its product at a fair and reasonable price having regard to circumstances.

Darlington and Stockton Plumbing Classes.

Students from the Darlington and Stockton plumbing classes spent an enjoyable day at Newcastle-on-Tyne last week. During the morning they visited the sanitary appliance works of Messrs. Adamsez, Ltd., at Scotswood, and later were entertained to lunch by the two Master Plumbers' Associations.

Mr. Worth presented medals given by Mr. Pickersgill, President of the Stockton Association, and Mr. C. B. Rawson, President of the Darlington Association, and other medals subscribed to by members to the following students who obtained highest marks during the session:—Stockton: 1, H. Griffith; 2, J. Fletcher. Darlington: 1, A. Polson; 2, J. Dixon. J. Jackson was awarded the special medal presented by Mr. Metcalf for the best home work. Later the party paid a visit to the lead works of Messrs. Walker, Parker, Ltd.

MODERN PAINTS, PAINTING AND DECORATION.

In connection with the paper on "Modern Paints, Painting and Decoration," read by Mr. A. S. Jennings, F.I.B.D., at a recent meeting of the Northern Polytechnic Institute, the following questions were asked, the answers being appended in each case:—

Question: Is paint spraying detrimental to the operator?

Answer: If the work is done on the outside there is usually sufficient wind to remove all danger, but when the work is done on the inside it is advisable not to spray with white lead. When articles, such as bicycle or motor lamps, are being painted by spraying the work is done in a cabinet provided with an exhaust fan, which carries away the volatile substances of the turpentine in the paint, as well as portions of the paint itself. Many men have been working at the spraying for years without ill effects.

Question: Can French polishing be done by spraying?

Answer: Some excellent examples of French polishing have been produced by spraying, but in some cases the deposit of the shellac on the surface by means of spraying should be followed by a polishing. Even then the work is considerably facilitated.

Question: What is the best way to prepare a surface which has received a coating of creosote in order to fit it for receiving paint?

Answer: The work should be rubbed down, then a thin coat of first-class shellac varnish should be given, but care must be taken not to have it too thick. Two thin coats are desirable to get a good job. The paint will dry on the shellac quite easily.

Question: Would not the paint applied to shellac be likely to peel off?

Answer: No. The best proof is that shellac varnish is used for knots on nearly all painted work, although the varnish is usually then called "knotting." The paint does not peel off the shellac on the knots, neither will it peel off if the shellac is put on other parts, such as the sappy parts of the wood.

Question: Why has white lead, so long known as a good paint, been assailed by zinc oxide, Timinox and other of the new pigments?

Answer: One might almost as well ask why should oak, which is recognised for its durability, be assailed by the introduction of pine or teak or any other wood used in building? In the manufacture of paints efforts are constantly being made to produce materials which shall be superior in some respect to those hitherto made. This superiority may be in the first cost, the durability, the colour, the opacity or the spreading qualities and all should be considered in making a comparison between them and the older and better known products.

Question: In ordinary painter's work certain colours are charged at an increased price to the ordinary or common colours. It would be useful to know which colours a painter is justified in charging extra for.

Answer: One of the best known price books gives common colours as "a mixture of white lead, lamp black, red lead, venetian red, umber, any of the common ochres and oil," and suggests that an extra price should be charged for "ornamental colours, such as mineral green, prussian blue, indigo, pinks, reds, yellows, &c." This, however, is a very vague division. Chrome yellows, indian reds, venetian reds, prussian blue, all come under the head of common colours, but an extra charge should certainly be made when such expensive colours as cadmium yellow, crimson lake, madder, cobalt blue, &c., are used.

Question: How can I distinguish a good paint from a bad one without troubling to have it analysed? In other words, as an architect, when should I be justified in ordering off the job a paint which looks suspicious?

Answer: The odour of a paint would create suspicion if the characteristic smell of oil and turpentine were absent, but no one, even the greatest expert, could tell merely by looking at a paint whether it was good or bad. It is for this reason that I have so long advocated the use of genuine white lead and genuine zinc oxidle or a specified admixture of them, or alternativey the use of a really first-class ready-mixed paint. There are now many brands on the market which are so largely used that the name of the brand has become very valuable to the manufacturers, and for their own protection they would not send out any admixture below the mark under that particular brand. An analysis of a paint by no means determines its value, and an instance of this is when a paint is specified to consist of genuine hydro-carbonate of white lead. An analysis might clearly show no pigment excepting genuine white lead was used, and yet it might be so coarsely ground as to make a very bad paint. Much of this inferior white lead was imported from Germany before the war. In specifying white lead it is always advisable to clearly state that it must be of English manufacture. The corroders of lead in this country are very careful to keep up the standard and any adulteration is indicated by the term "reduced white lead" being used on the packages containing it.

Question: What is the best paint for iron and steel?

Answer: There is a very great diversity of opinion on this subject. Some experts prefer iron oxide, others swear by red lead, still others have a preference for white lead, while paint made from graphite or plumbago has many supporters. I am inclined to favour graphite, but much would depend upon the position of the iron and steel. For example, if it forms part of a bridge the paint must be more or less elastic in order to allow for the expansion and contraction of the structure under variations of temperature. If the colour of red lead is objected to as being too bright it can be altered by adding lamp black producing a chocolate, while the sombre hue of graphite can be improved by adding iron oxide or Indian red.

Question: What could be done with corrugated iron sheets to make the paint stick and prevent it peeling off?

Answer: It is necessary to apply a mordant or special wash to the surface before oil paint is applied. Most of the larger paint manufacturers produce a priming paint for application to corrugated iron which gives a grip or key to oil paint afterwards put on it. A good washable water paint can be applied directly on the iron and holds very well. It can be covered with an oil paint when desired.

Question: Is it not a fact that an expert painter can produce a more durable job than one who is not an expert? A case in point: A building was painted by two men with exactly the same paint. One half by a painter of experience and the other by a novice. The former used less paint than the latter and his work was found to last longer. Did this not show that the application of paint by means of a brush is superior to that put on by spraying?

Answer: No. It was not a question of the force used on the brush, because this force could be considerably added to when spraying. It was a fact that the expert painter well brushed out his paint, which is clearly shown by the fact that he used a smaller quantity. He thus produced a thinner film of paint which is always found to last longer than a thick coat. The fault of most amateurs and the unskilled is that they apply too much paint, and do not brush it out well. An oil paint should be applied sparingly and each brushful should be made to go as far as possible.

Building Materials Exhibit at Wembley.

At the first meeting of the Building Materials Committee of the British Empire Exhibition, Sir Lawrence Weaver, who presided, pointed out that if firms cared to combine and make a joint exhibit, they could do so. He impressed upon the Committee the desirability of having an attractive decorative scheme for the exhibits of this Section. A firm making several articles could, if these were closely related, show them in one exhibit.

THE GOVERNMENT AND PUBLIC FOOTPATHS.

A recent decision of the Railway and Canal Commission in the case The Secretary of State for War v. The Middlesex County Council, reported in *The Times*, March 28, illustrates the extreme importance of maintaining the independence of the Courts as a check to departmental or beaurocratic measures, and the Court said this was one of many cases pending.

In 1916 under the Defence of the Realm (Land Acquisition) Act the Air Ministry had taken possession of certain land over which there was a public footpath which under the Defence of the Realm Regulations they had closed. As we understand the case, in 1918 the Government Department under section 3 of the above Act had acquired this land outright, and they were now applying to the Court for leave permanently to close the path. The Government Department were willing to keep it open during the day-time, but desired to close it at night, but the Court intimated this fact did not affect the form of the application.

The application was made under section 6 subsection (3) of the Act to which the Court held no limitation of time is attached. The Court held it had jurisdiction to grant an order closing the footpath permanently, but it had to be considered whether in the public interest such an order should be made or whether a conditional order should be granted or no order made at all. The case put forward for the Government was that at night the footpath was frequented by undesirable characters and the discipline of the camp would be impaired, but on the other side, it was pointed out that the district was a growing one and that the footpath shortened the distance between Willingdon and Uxbridge by one-third of a mile. Mr. Justice Lush considered that the middle course suggested by the Government might be adopted and the foot-path remain open by day but be closed at night, but the majority of the Court pointed out that the land had been purchased subject to this disability, and if removed the land could be sold at an enhanced price, and this was not within the contemplation of Parliament in framing the Act. The application was to extinguish either wholly or in part the public's right of access to the footpath, but the legal maxim, "Once a highway always a highway," was as old as the Common Law itself and powers to close highways were only granted in times of war and when the country was threatened with invasion, and the application should be refused.

We do not in any way comment on the decision itself, but only cite the case as an example of the importance of the courts having power to intervene between the public and departments, for in some modern Acts of Parliament an attempt has been made to whittle away the authority of the Courts. Mr. Justice Lush, although dissenting from the majority of the Court, pointed out the importance of orders granted in Chambers obtaining the consent of the Court even when there was no opposition.

As regards the remainder of the majority of the Court that powers granted during the war should not be exerted in peace-time, we wish this fact was more present to the Legislature in other directions, for instance Rent Restriction, which was introduced for the war but seems likely to endure to the millennium if the voice of those who derive benefit from the restrictions is alone listened to.

Ancient Roadway at Darlington.

A discovery of historical interest has been made at Darlington in Grange-road. Some workmen were busy laying gas mains, and some distance below the surface they came upon a roadway paved with cobbles, which presented a worn surface. It is probably part of the Great North-road, along which the Imperial Forces travelled in the days of the battles with the Scots, and was used in the time of Henry VIII.

CONSTRUCTIONAL ENGINEERING UP-TO-DATE: FOR ARCHITECT & CONSTRUCTOR

By GEO. KENWORTHY, Assoc.M.Inst.C.E.

PART III: Details of Construction (Section 3).

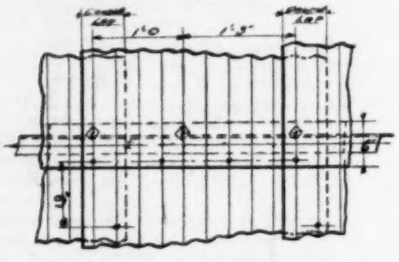
SHEETING CONNECTIONS.

Riveting or Bolting of Seams.

It is strange that there is quite a variation in practice in this respect as between different parts of the country. In the Midlands and certain other centres, riveting of the seams is quite usual. There is little difference in the cost of fixing either way; of the two the small rivets give a neater appearance, and make for tighter and therefore more watertight seams, and there is not the danger of the small fixings working loose and nuts dropping off as in the other case. But if there is any question of sheets being removed, or alterations to windows, doors, or side covering thereby then the bolted fixings make these alterations easier and the sheets are not damaged by the cutting off of the rivets. The alternative fixings are entirely a matter for expediency, and though seam bolts are the commonest, in an absolutely permanent building, rivets are the better fixing.

Position, Number and Pitch of Fixings.

As every contractor, or the sheet fixers of the contractor, have all got different ideas as to the number of fixings required, if a sound



Plan of Galvanised Corr. Sheets Demonstrating Double Side Lap for Roof, also Number & Position of Fixings.
⊙ Represents Hook Bolt
• Represents Seam Bolt

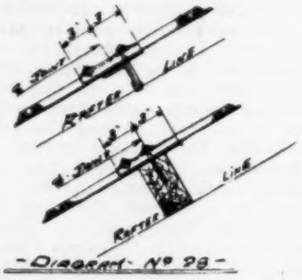
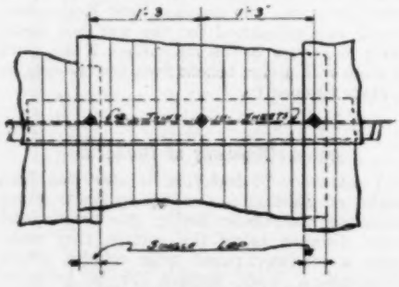


Diagram No 28.

job at the finish is to be expected, it must be specified for the client what constitutes reasonable requirements. A compromised plan of a sheet showing fixings which in the writer's



Elevation of Galvanised Corrugated Sheets showing Single Lap & Position & Number of Fixings for Side Sheeting

Diagram No 29.

view ought not to be reduced for double lap roof sheets is shown in Diagram 28. (Note the cross section showing fixing to timber or steel purlin, and the line of seam bolts in addition to the line of hook bolts.) In roof sheeting this double line of fixings is absolutely essential for watertight work, though not by any means always provided.

For side sheeting the fixings are different, and may be carried out as shown in Diagram 29 (Note the different positions in the centres of joints as compared with the purlin, between roof and side sheeting, making a difference of course in lengths of sheets to be ordered. In roof sheets the centre of purlin, but on sides the back of framing bar, is the centre of lap.) If timber purlins are being used with only one line of fixings, then it is an advantage slightly to alter the position of the centre of the joint so as to bring the fixing nearer to the outside edge of the sheet, thereby keeping the joint closed.

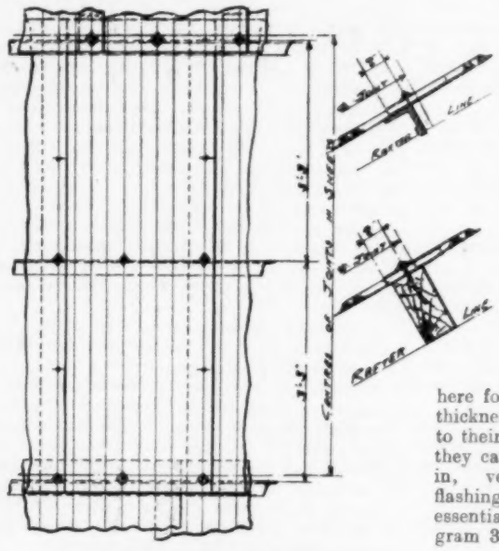


Diagram No 30.

Cross sections on Diagram 30 show connection of asbestos cement sheets to purlin, which sections apply equally as far as position of centre of lap is concerned to galvanised corrugated or asbestos cement corrugated sheets in roof, when only one line of fixings is being provided. Diagram 31 shows a steel purlin erected in the wrong direction for sheeting. (Note the hook bolt, which should bear against the purlin, falling away from same, due to thrust of sheets.)

Diagram No 31

Asbestos Cement Corrugated Sheet Fixings.

Diagram 30 shows a plan and cross sections of attachments to timber or steel purlins or framing. Many of the points mentioned in connection with galvanised corrugated sheets apply equally to asbestos cement sheet fixings. It is not usual, however, nor is it suggested in makers' details, to put in two lines of fixings in end laps of roof sheets. This has been done, however, in one or two cases under the writer's notice, and there is no doubt that the additional line of seam bolts helps considerably in closing the joints.*

* Attention should be drawn to Diagram B in the letter appearing in our issue of April 6, where the makers of 1¼ corr. lap sheets suggest double fixings in the vertical seams, one each side of the joint.

In fixing galvanised sheets the vertical joints are shown in line from top to bottom (Diagram 28). They are quite generally fixed in this way. With asbestos cement sheets the joints are either mitred, or, as alternatively suggested, stepped back (Diagram 30). This is to reduce the thicknesses at the laps from what would be four (and is four in the case of the galvanised sheets) to three. If this were not done the joint would be open by ¼ in., the thickness of the asbestos cement sheet. Makers' details generally recommend the method of mitreing corners, but this means that the danger of breaking sheets, in doing this saw-cutting on site, is increased. There is the advantage, however, that this way keeps the joints in line as described for galvanised sheets, and if the length of the roof is a multiple of the effective cover of sheets, then end ripping of sheets is avoided—which is obviously necessary if sheets are stepped (see Diagram 20). In a really long building, however, the advantages of stepping are the greater, and there is little waste at ends, as the cuttings from one end may be used at the other.

It should be mentioned in connection with asbestos cement sheet covering that special right-angle corner pieces are required at the ends of building. These present certain difficulties in fixing, and especially in picking up the centres of corrugation round the return face. These are very awkward from the carriage, handling, and breakage point of view also. There is, of course, no such difficulty with galvanised corrugated sheets, which allow of adjustment to pick up the pitch, and are bent round on site by the sheeter. There are also certain difficulties for fixing asbestos cement sheets round casements. In the case of galvanised corrugated sheets the last corrugation is bent over the window frame and generally there is no necessity here for vertical lead flashing. Owing to the thickness of the asbestos sheets, however, and to their riding over at laps, and remembering they cannot be bent in, vertical lead flashing here is essential (see Diagram 32).

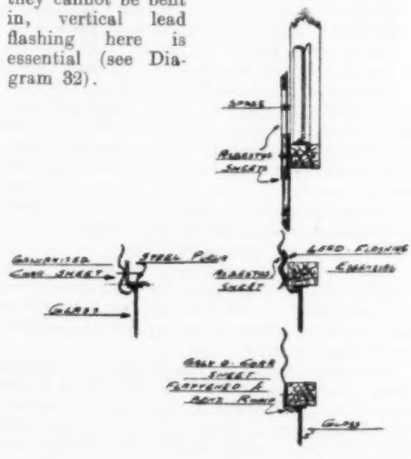


Diagram No 32.

In fixing it is necessary to insist that all holes in the material are drilled and never punched like galvanised corrugated sheets, though the writer has seen many sheeters punching, notwithstanding the makers' instructions to the contrary. A small wood brace and twist drill are best for this purpose. Holes should be put in ⅛ in. or 3-16 in. larger in diameter than that of the fixing screw, to allow for movement due to expansion or contraction of the purlins. For the same reason the screws must not be driven tightly on to the sheets, and, further, lead limpets which will bend to the sheets must in all cases be used. On Diagram 33 are shown a galvanised drive screw and a lead limpet washer.

While drive screws are so commonly used for fixing sheeting to timber it might be mentioned how practically impossible it is to draw these. They cannot be unscrewed with a screwdriver, and the diameter over the thread is greater than that of the neck. The destruction of otherwise perfectly good sheets in such large quantities at the dismantled Government aerodromes, etc., may be called to mind. This point is in favour of cut threaded and properly nicked screws being used, for fixing to wood framing; or else angle iron framing with the conventional hook bolts.

DIAGRAM N° 33

It should be hardly necessary to refer to the essential detail of fixing in that the screws or bolts must be put through the crown of the corrugation. There are many instances of careless fixers overlooking this point; and no watertight roof can be obtained if this essential is not attended to.

Special Fixings for Sheets.

Certain constructional firms in the north provide more elaborate fixings for corrugated sheets than are usual further south, owing, perhaps, to their experience of severer weather more common in that part of the country. It is far from uncommon, however, to have corrugated sheets torn from their fixings by heavy winds, and there is a great deal to be said for the fixings which provide a double bolt attachment, and clip round the purlins or framing. Compared with the whole cost of building, these special attachments cannot be said to make a really expensive addition (see Diagram 34). The danger to sheeted buildings is not so much to their blowing down as a whole, but of the roof covering being ripped away. Especially is this the case in open buildings where the wind can get under the roof, or can blow against the sheeted sides from the inside, forcing the sheets against their fastenings, and not against the framing. This point has particular application to open hay barns as well as to larger buildings where the above conditions obtain. If the building is to be put up in a very exposed part, attention to these details is important. In certain cases, where buildings have been shipped for erection abroad in countries where monsoons are prevalent, the writer has arranged for wind strips (light galvanised flat iron) to be attached to the outside of sheeting (see Diagram 35).

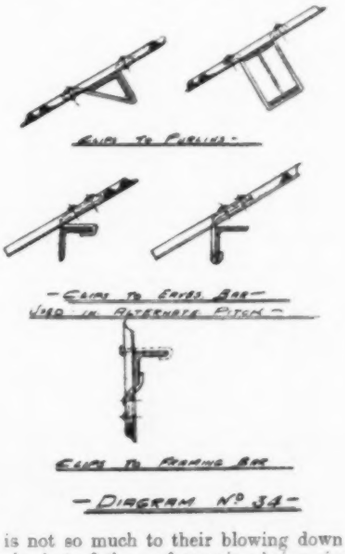


DIAGRAM N° 34

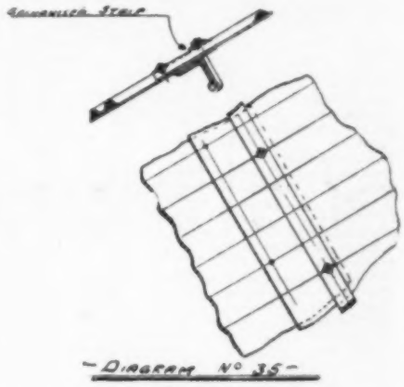


DIAGRAM N° 35

Condensation.

Condensation on the inside of galvanised corrugated sheets is in many cases a source of trouble. To avoid this, condensation fittings—which raise the sheets from off the purlins (where drip takes place)—are recommended (see Diagram 36). The metal saddle has a raised boss through which the hook bolt passes, and when the nut is screwed down the burr of the punched hole is pressed into the concave washer, thus making a perfectly watertight joint. The saddle also acts as a locknut, prevents hook bolts working loose, and avoids that distortion of the corrugation so common when sheets are fastened in the ordinary way.

DIAGRAM N° 36

(To be continued.)

[*** The author of these articles writes from his own experience, and we do not necessarily endorse all his observations.—Ed.]

Living Craftsmen.

Writing to *The Times*, Mr. J. Starkie Gardner says:—"As one of the 'living craftsmen' I would suggest that old examples should be regarded not as models to be slavishly copied, and, perhaps, passed off as antiques, but as sources of inspiration for new departures and designs.

"Opportunities for living craftsmen to become original are very obvious; but it may be that few will materialise. The cost of bronze is very frequently deterrent, the use of cast iron necessitated in its place being far less expensive. This, however, requires frequent painting, otherwise it is subject to rust and decay; therefore, the cast iron now so lavishly displayed may, in a short time, cost as much to preserve as if bronze had been used.

"Stately buildings now everywhere in course of erection should have the decorative additions of wrought-iron balconies and lamps; the artist craftsman in bronze or wrought iron need never repeat himself; but the present monotonous cast iron exterior embellishments lack altogether craftsmanship and decorative design. The British craftsman in metals is difficult to surpass, and every opportunity should be made to use his skill."

NEW BUILDINGS IN LONDON.

Shepherd's Bush.—Church to be Rebuilt.—A London landmark which is doomed to disappear before long is St. Saviour's, Oxford-street, for some fifty years and more the principal place of worship of the deaf and dumb of London. The church is to be rebuilt at Shepherd's Bush as the West-End church for the deaf and dumb.

Clapham-road.—Church and Institute.—Plans are being prepared for a church and institute for the deaf and dumb for the south-west district on a site in Clapham-road, granted by the Ecclesiastical Commissioners.

Clapham-road.—Extension of Premises.—The Times Furnishing Co., Ltd., are extending their premises in Clapham-road, S.W. We understand that the contractors have not yet been appointed.

Knightsbridge.—Flats.—We understand that a proposal has been made to close Knightsbridge Cavalry Barracks and to transfer it to the Ministry of Health or to the L.C.C. for conversion into flats.

Bermondsey.—Extension.—To commemorate the 150th anniversary of the foundation of the Roman Catholic parish at Bermondsey, a fund is to be raised for the extension of the local Catholic schools.

"Metroland."—Estate Development.—Several estates are in process of development at "Metroland," notably Kingsbury Garden Village, Neasden, Wembley Park estate, Chalk Hill estate, Wembley Park, Grange, and Cecil Park estates, Pinner, and the Cedars estate, Rickmansworth, and Chorley Wood. Mr. Henry Gibson, of Baker-street Station, has issued a comprehensive book dealing with the work now going on as well as that which is proposed, and containing particulars of the cost of land and the prices at which houses may be built. Since 1919 over 400 houses, both large and small, have been erected on the estates mentioned under the supervision of well-known architects.

Borough.—Demolition.—Messrs. Holliday & Greenwood, Ltd., of Battersea, are commencing the demolition of the old property on the north side of St. Thomas-street, extending to the corner of Borough High-street. Incidentally, the opportunity is being taken to widen the entrance to St. Thomas-street by setting back the building line. A modern shop and office building is to be erected on the site, to plans prepared by Messrs. Robinson & Roods, 37, Bedford-row, W.C.1. In addition to the shops there will be three floors of offices.

Croydon.—Extension.—A proposal for increasing the accommodation of the Whitgift Grammar School, by building a new Middle School on a site near the Brighton-road, has been engaging the attention of the Governors of the Whitgift Foundation. No decision has yet been come to, though it is probable that competitive plans will be considered when the matter comes forward.

Bow.—Children's House.—The foundation stone of the Children's House, in Bruce-road, was laid last week. The building will, when completed, provide a centre for the care, instruction, training and amusement of young people.

Charing Cross-road.—Shopping Arcades.—The premises formerly occupied by Messrs. Crosse & Blackwell have been taken over by Mr. Victor Luxenburg, of 90, Fleet-street, who is reported to have the intention of converting them into fine shopping arcades, one on each floor, with escalators communicating with the street.

Berwick-street.—Alterations.—Mr. H. Parsons, Clapham Junction and Chelsea, is carrying out extensive alterations at No. 70, Berwick-street, W. The alterations include sanitary work and the entire remodelling of the front. The iron and steel work is being supplied by Messrs. Drew, Perks & Co., and pavement lights by Messrs. Haywards. The architects are Messrs. Robins, Gore & Mercer, Wardour-street. The contractors are also carrying out a new electric light installation.

THE "SENTINEL" WAGON WORKS.

On Thursday, April 12, the Sentinel Wagon Works (1920), Ltd., gave a demonstration to the Press at Shrewsbury of their new "Super-Sentinel" wagon. The party were conducted round the extensive works and through the numerous shops by members of the firm. The various stages of manufacture were explained and the new departures from the early types of wagons to the Super-Sentinel type were pointed out. The process of construction proved of great interest, and the apparent ease with which the various parts were brought to a finished condition, proved fascinating to many. The "Super-Sentinel" wagon, as a carrier for builders and builders' merchants, is undoubtedly in the front rank. A practical test has been made in carrying breakable materials, such as tiles and the like and the damage done proved to be, by "Sentinel" carrier, 1 per cent against 22 per cent. by rail, a difference worth serious consideration. In addition, there was a great saving in the handling of the materials carried. The 3-way tipping wagon, here illustrated, was fully demonstrated to the party.

These wagons have been tested as follows:—(*a*) A wagon was put on the test bed and run

The "Super-Sentinel" Tipping Wagon.

the equivalent of 10,000 miles, up a gradient of one in ten, fully loaded, and showed practically no weak points. (*b*) The wagon was then run 10,000 miles on ordinary work, and is still running perfectly with a total mileage of about 60,000 to its credit and no trouble. (*c*) It was decided in view of future legislation that about 20 per cent. more power would be an advantage to users in future, and a new wagon with this increase in the power plant and other detail improvement was made. It has now been tested over 30,000 miles and is the pattern in production. It is interesting to note that the wagon gave exactly the same mileage on a tank of water after 28,000 miles as it did on its early tests, showing its consistent economy and freedom from wear.

The "Super-Sentinel," while following the main lines and retaining all the fundamental principles of the "Sentinel," differs from the latter in that many important improvements have been embodied in it.

The company is also doing much to mitigate the acute housing shortage in Shrewsbury, caused principally by the advent of this company. The ultimate scheme visualises four hundred houses. The houses are of various sizes and designs, but have two classes of accommodation, two sitting rooms and four bedrooms, and two sitting and three bedrooms. The rents vary from 17s. to 19s. per week, according to the class of accommodation. The houses are supplied with electric light from the works' power house, and also with a continuous hot-water service both for heating and washing. This hot-water is obtained from calorifiers in the power house.

RATES OF WAGES IN THE BUILDING TRADE.

The following are the rates of wages in the building trade in England and Wales. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Brick-Masons' layers' Labourers.	Plasterers
Aberdare	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Accrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Altrincham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Ashton-under-Lyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Barnsley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Barrow-in-Furness	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Barry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Bath	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½	
Bedford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Birkenhead	1/9	1/9	1/9	1/9	1/9	1/10	1/9	1/4½	
Birmingham	1/8	1/8	1/8	1/8	1/8	1/9	1/8	1/3	
Bishop Auckland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Blackburn	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Blackpool	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Bolton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Bournemouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Bradford	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Bridgwater	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	0/11½	
Brighton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Bristol	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Burnley	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Burton-on-Trent	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Bury	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Cambridge	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Cardiff	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Chatham	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0	
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Cheltenham	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½	
Chester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Chesterfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Colchester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Coventry	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Crewe	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Darlington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Derby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Doncaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Dudley	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Durham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
E. Glam.(Mon. Vall.)	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Eastbourne	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Exeter	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3½	1/0½	
Folkestone	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0	
Gloucester	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½	
Grantham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Grays	1/8	1/8	1/8	1/8	1/8	1/8½	1/7	1/3	
Grimsby	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Great Yarmouth	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0	
Guildford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Halifax	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Harrogate	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Hartlepools	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Hastings	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0	
Hereford	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½	
Huddersfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Hull	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Ipswich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Lancaster	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Leamington Spa	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Leeds	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Leicester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Lichfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
Lincoln	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Liverpool	1/9	1/9	1/9	1/9	1/9	1/10	1/9	1/4	
Llanelly	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
London	1/8	1/8	1/8	1/8	1/8	1/8½	1/7	1/3	
Loughborough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Luton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Maidstone	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0	
Manchester	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Mansfield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Merthyr Tydfil	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Middlesbrough	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Newcastle-on-Tyne	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Newport, Mon.	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Northampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½	
Norwich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Nottingham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Oakham	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/3	
Oldham	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Oxford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/1½	
Plymouth	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/3	
Pontypridd	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Portsmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Preston	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Reading	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Rochdale	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0	
Rochester	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/2	
Rugby	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½	
St. Albans	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
St. Helen's	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Scarborough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3	
Sheffield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Shrewsbury	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/0½	
Southampton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Southend-on-Sea	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Southport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
South Shields	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Stockport	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Stockton-on-Tees	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Stoke-on-Trent	1/8	1/8	1/8	1/8	1/8	1/9	1/8	1/0½	
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4	1/3	
Sunderland	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Swansea	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Swindon	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½	
Taunton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Torquay	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½	
Tunbridge Wells	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Wakefield	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Walsall	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/3	
Warrington	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
West Bromwich	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/3	
Wigan	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/0½	
Windsor	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/3	
Wolverhampton	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/2	
Worcester	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2	
York	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½		

(For rates of wages in the Building Trade in Scotland, see page 673.)

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in; the name and address at the end is the person from whom or place where quantities, forms of tender, &c., may be obtained.

BUILDING AND PAINTING.

✱APRIL 21.—**St. Marylebone.**—PAINTING, CLEANSING, &c.—Certain repairs, painting, cleansing, and other works to be carried out at the St. Marylebone Hospital, Rackham-street, Notting Hill, W., for the Guardians of the Poor of the Parish of St. Marylebone. Messrs. Jarvis & Richards, architects, 60, Compton-street, S.W. Deposit One Pound Treasury Note.

APRIL 23.—**Barnsley.**—WAREHOUSE.—Erection of warehouse, fitting shop, office, &c., to Stairfoot Glassworks, for Messrs. Tomlinson & Co., Ltd. Mr. C. F. Moxon, architect, Regent-street South, Barnsley.

APRIL 23.—**Beverley.**—FILTER HOUSE.—Erection of filter house, for the T.C. Messrs. Whiting & Reynolds, architects, Beverley. Deposit £1 1s.

APRIL 23.—**Carlisle.**—TRANSFORMER STATIONS.—Erection of three transformer stations at Church-street, Stanwix, Blackwell-road, and Norfolk-street, for the T.C. Mr. Henry C. Marks, City Engineer, 18, Fisher-street, Carlisle.

APRIL 22.—**Exeter.**—DEMOLITION.—For the demolition of 23 and 24, High-street, Exeter, for Lloyds Bank, Ltd. Mr. J. Archibald Lucas, architect, Guildhall Chambers, Exeter.

APRIL 23.—**Farnborough.**—COTTAGES, &c.—Erection of two cottages, stables, cartsheds, stores and disinfector station, for the U.D.C. Mr. J. E. Hargreaves, Surveyor, Town Hall, Farnborough, Hants. Deposit £1 1s.

APRIL 23.—**Glasgow.**—PAINTING.—For painting and cleaning works in Horse Market, Meat Market and Cheese Market, for the T.C. Office of Public Works, City Chambers, 64, Cochrane-street, Glasgow. Deposit £1 1s.

APRIL 23.—**Leek.**—HOUSES.—Erection of 15 blocks of 2 houses each, type A; one block of 2 houses each, type B; 28 blocks of 2 houses each, type A; 3 blocks of 2 houses each, type B; 49 blocks of 2 houses each, type A; 11 blocks of 2 houses each, type B, on the Housing Site off Buxton-road, Leek, for the U.D.C. Mr. W. E. Beacham, Architect and Surveyor to the Council, Town Hall, Leek.

APRIL 23.—**Warrington.**—PAINTING.—For the external and internal painting of Orford Hall, for the T.C. Mr. Andrew M. Ker, Borough Engineer, Warrington.

APRIL 23.—**West Felton.**—HALL.—Erection of a public hall at West Felton (brick-and-slate). Mr. R. E. Jones, Rednal Mill, West Felton, Oswestry.

APRIL 24.—**Brampton.**—BANK PREMISES.—Erection of bank premises at Brampton, Cumberland, for the Bank of Liverpool and Martins, Ltd. Mr. H. Oldfield, architect, Workington.

APRIL 24.—**Corris.**—CHAPEL.—Erection of chapel. Messrs. O. Morris Roberts & Son, architects, 1, Bank-place, Portmadoc.

APRIL 24.—**Edinburgh.**—CAR DEPOT.—Reconstructing the Portobello Car Depot to form new electric car lyes, for the T.C. Mr. James A. Williamson, City Architect, City Chambers, Edinburgh.

APRIL 24.—**Glasgow.**—HOUSES.—Erection of houses at Yorkhill, for the T.C. Mr. J. Lindsay, Town Clerk, City Chambers, Glasgow.

APRIL 24.—**Huddersfield.**—MISTAL.—Erection of a mistal for fourteen head of cattle, at Wilderness Farm, Outlane, near Huddersfield. Messrs. Chas. F. L. Horsfall & Son, architects, Lord-street Chambers, Halifax.

APRIL 24.—**Lindley.**—HOUSE.—Erection of a detached house in Thornhill-road, Lindley. Mr. Arthur Shaw,ch aritec, Gisarot .

APRIL 24.—**Melrose.**—ALTERATIONS.—For the various works in connection with alterations on female ward No. 4 and new sanitary annexe at Roxburgh, Berwick and Selkirk District Asylum, Melrose. Messrs. J. & J. Hall, architects, Ladhope Vale, Galashiels.

APRIL 24.—**Netherton.**—CLUB.—Erection of new club premises at Netherton, near Huddersfield. Messrs. Lunn & Kaye, architects, Milnsbridge, Huddersfield.

APRIL 24.—**Scarborough.**—WALL.—Setting back the brick stone wall at the junction of Westwood-road and Valley Bridge-road, for the T.C. Mr. H. W. Smith, Borough Engineer, Scarborough.

APRIL 24.—**Stanley.**—HOUSES.—Erection of forty houses at Stanley, co. Durham, for H.M. Commissioner of Works. Contracts Branch, H.M. Office of Works, King Charles-street, S.W.1. Deposit £1 1s.

APRIL 24.—**Stockport.**—BUSINESS PREMISES.—General contract work for branch premises and emporium, Gorton-road, North Reddish, for the Stockport Industrial and Equitable Co-operative Society, Ltd. Mr. S. Taylor, General Secretary, Stockport. Deposit £5.

APRIL 24.—**Tottenham.**—CONVENIENCE.—Additions to convenience, for the U.D.C. Surveyor, Town Hall, Tottenham, N. Deposit £1 1s.

APRIL 25.—**Birmingham.**—BRIDGE.—Widening of the masonry bridge over the London, Midland and Scottish Railway at Bridge-road, Saltley, for the T.C. Mr. Herbert H. Humphries, City Engineer, The Council House, Birmingham. Deposit £2.

APRIL 25.—**Bonnybridge.**—HOUSES.—The Central District Committee of the Stirlingshire County Council invite tenders for the various works required in connection with the erection of 18 additional houses at the Bonnybridge (Highland Dykes) Housing Scheme. Mr. David W. Glass, architect, 7, Gladstone-place, Stirling. on deposit of £1 1s.

APRIL 25.—**Cardiff.**—ROOF WORK.—Stripping of boiler house roof at Roath Power Station, for the T.C. Electrical Engineer, The Hayes, Cardiff.

APRIL 25.—**Leeds.**—VARIOUS WORKS.—For asphalte lining to swimming bath, builder's work at Kirkstall-road baths, &c., for the T.C. Mr. W. T. Lancashire, City Engineer, Leeds.

APRIL 25.—**London.**—VARIOUS WORKS.—(1) Cleaning and painting works and repairs at South-Eastern Fever Hospital, New Cross; (2) internal and external painting and repairs at South-Eastern Ambulance Station, New Cross; (3) internal cleaning and painting at Queen Mary's Hospital for Children, Carshalton; (4) alterations to cottage for Clerk and Storekeeper at King George V Sanatorium, Godalming; (5) repairs, &c., boundary fencing at Orchard Hospital, Dartford; (6) laying-out grounds at Princess Mary's Hospital, Margate, Kent; (7) extension of pantry at Brook Hospital, Shooters Hill, S.E., for the Metropolitan Asylums Board. Office of the Board, Victoria Embankment, E.C.4. Deposit £1 each contract.

APRIL 25.—**Rothwell.**—HOUSES.—Erection of 36 scullery houses on the Rothwell Haigh building site, for the U.D.C. Mr. W. Dodgson, Clerk, Council Offices, Rothwell, Yorks.

APRIL 25.—**York.**—PAINTING.—For painting work at the Institution of the Board of Guardians. Mr. G. Sykes, Clerk, Union Offices, York.

APRIL 26.—**Linthwaite.**—HOUSE.—Erection of a detached residence, near Bankfield, Linthwaite. Messrs. C. F. Mallinson & Son, Market-place, Huddersfield.

APRIL 26.—**Tonbridge.**—COTTAGES.—Erection of three cottages, for the U.D.C. Surveyor, Tonbridge.

APRIL 26.—**Warwickshire.**—COTTAGES.—Erection of police cottages at Meriden (1), Radford Semele (1), and Weston-under-Weatherley (1). Mr. A. C. Bunch, County Architect, 27, Binswood-avenue, Leamington. Deposit £1 1s.

APRIL 28.—**Cardiff.**—PAINTING.—(1) Renovations and spring cleaning at Children's Homes at Ely, Cardiff, and Penarth; (2) external painting, City Lodge, East; (3) external painting, City Lodge, West, for the Board of Guardians. Mr. R. Stephenson, Clerk, Union Offices, 11, Park-place, Cardiff.

APRIL 28.—**Earsdon.**—HOUSES.—Erection of 30 houses, for the U.D.C. Surveyor, Council Offices, Shiremoor.

APRIL 28.—**Irvine.**—HOUSES.—For the various works in connection with the erection of 12 additional houses in connection with the Bank-street Housing Scheme. Mr. John Armour, architect. Deposit £1 1s.

APRIL 28.—**Irvine.**—PAINTING.—For the painter work of 18 additional houses in the course of erection, for T.C. Messrs. David Gillies and A. R. Wilson, Joint Town Clerks, Council Chambers, Irvine. Deposit £1 1s.

APRIL 28.—**North Marston.**—REPAIRS, &c.—Repairs and alterations to farmhouse and buildings, and erection of two cow houses, &c., at Brook Farm, North Marston, for the Bucks Agricultural Committee. Mr. G. M. Odam, County Land Agent, 21, Walton-street, Aylesbury.

APRIL 28.—**Scarborough.**—HOUSES.—Erection of four pairs of semi-detached and one block of four in Scamer-road and Edgehill-road, for the B.C. of Scarborough. Borough Engineer and Surveyor, Town Hall, Scarborough.

APRIL 30.—**Bolton-upon-Dearne.**—HALL AND INSTITUTE.—Erection of public hall and institute at Goldthorpe, for the Miners' Welfare Fund. Messrs. Garside & Pennington, architects, Ropergate, Pontefract. Deposit £2 2s.

APRIL 30.—**Carlisle.**—COTTAGES.—Erection of 115 cottages on the Blackwell-road Estate, and 80 cottages on the Wigton-road Estate, for the T.C. Mr. Henry C. Marks, City Engineer, 18, Fisher-street, Carlisle.

APRIL 30.—**Chirk.**—HOUSES.—Erection of 29 Type "A" houses on sites at Chirk and Glyn Ceiriog, for the R.D.C. Messrs. Berrington, Son & Watney, architects, Prudential Chambers, Wolverhampton. Deposit £2 2s.

APRIL 30.—**Durham.**—HOUSES.—Erection of 16 "A" Type houses at Framwellgate Moor, for the R.D.C. Mr. Geo. Gregson, surveyor, 38, Saddler-street, Durham.

APRIL 30.—**Edinburgh.**—CONCRETE BEACON.—The Commissioners of the Northern Lighthouse Board, Edinburgh, invite tenders for the erection of a concrete beacon on Skerinoe, a tidal rock in the Minch, off the entrance to East Loch Tarbert. The office of the Engineer, 84, George-street, Edinburgh, or at the Commissioners' Store, Oban, on deposit of £1.

APRIL 30.—**Glasgow.**—BRIDGE WIDENING.—For the work to be executed in the widening of Dalmarnock Bridge over the River Clyde at Dalmarnock, Glasgow, for the Caledonian Railway Co. The Company's Engineer, Buchanan-street Station, Glasgow. Deposit £2 2s.

APRIL 30.—**Great Houghton.**—WELFARE HALL.—For the erection of a miners' welfare hall, at Great Houghton. Messrs. W. H. Wagstaff & Sons, 57, Salter-gate, Chesterfield, and R. Higginbottom, Thurnscoe, Rotherham, joint architects.

APRIL 30.—**London.**—TO PAVING CONTRACTORS.—Paving the carriageways and footways of various streets for the Streets' Committee of the Corporation of London, agreeably to the specification to be seen at the office of the City Engineer, where Forms of Tender may be obtained. Asphalte carriageways (to be relaid with either Sicilian Natural or Seysell Rock Asphalte). The Committee do not pledge themselves to accept the lowest or any tender. Town Clerk, Public Health Department, and delivered at the Office of the Hallkeeper, Guildhall, E.C. 2, before 12 o'clock noon.

✱APRIL 30.—**London, E.1.**—ADDITION AND ENTRANCE GATE.—(1) An addition to the mortuary; (2) new entrance gates at Institution in Bancroft-road, for the Guardians of the Poor of the Hamlet of Mile End Old Town. Mr. Edmund J. Harrison, Lic.R.I.B.A., Architect to the Guardians, 23, Berkeley-road, Crouch End, N.8. Deposit £2.

✱APRIL 30.—**London, S.E.**—CLEANING AND REPAINTING.—Cleaning, repainting, &c., the bridge carrying the Southern Railway over the Southern approach to the Tower Bridge, for the London County Council. Chief Engineer, Old County Hall, Spring-gardens, S.W.1. Deposit £3.

BUILDING TRADE WAGES IN SCOTLAND.*

THE following are the present rates of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur:—

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Brick-layers' Labourers.	Plasterers' Labourers.
Aberdeen	1/7	1/7	1/7	1/7	1/8	1/8½	1/4	1/- to 1/3	
Airdrie	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Alexandria	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Arbroath	1/7	1/7	1/7	1/7	1/7	1/7	1/6½	1/1	
Ayr	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Bathgate	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Blairgowrie	1/7	—	1/7	1/7	1/7	1/7	1/6½	—	
Bo'ness	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Coatbridge	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Dumbarton	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Dumfries	1/6	1/6	1/6	1/6	1/8	1/8	1/6½	1/2	1/2½ 1/3½
Dundee	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Dunfermline	1/8	1/8	1/8	1/8	1/6	1/8	1/6½	1/2	
Edinburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Falkirk	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	1/6½	1/1½	
Galashiels	1/6	1/6	1/6	1/6	1/6	1/6	1/5½	1/1½	
Glasgow	1/8	1/8	1/8	1/8	198	1/8	1/6½	1/3	
Greenock	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/1 to 1/3	
Hamilton	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Hawick	1/6	1/6	1/6	1/6	1/8	1/6	1/6½	1/1½	
Helensburgh	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Inverness	1/3½	—	1/3	1/4	1/4½	1/4	1/5½	10d. to 1/2	
Kilmarnock	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Kirkcaldy	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Kirkwall	1/5	1/5	1/4	1/7	1/5	1/5	1/6½	1/2	
Lanark	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Leith	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Motherwell	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Perth	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/2	
Stirling	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Stirling-shire (Eastern District)	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	
Wishaw	1/8	1/8	1/8	1/8	1/8	1/8	1/6½	1/3	

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 672.

APRIL 30.—**Pladda.**—ALTERATIONS.—For alterations at Pladda Lighthouse Station, for the Commissioners of Northern Lighthouses. Engineer, 84, George-street, Edinburgh. Deposit £1.

✱APRIL 30.—**Smethwick.**—HOUSES.—Erection of 20 houses at Manor-road, in the Urban District of Oldbury, for the Corporation of Smethwick. Mr. Alex. Hosken, Borough Engineer, Smethwick. Deposit £1 1s. each copy.

APRIL 30.—**Thornley.**—COTTAGES.—Erection of nine Aged Miners' Cottages at Thornley. Mr. M. E. Johnson, (the Committee's Agent), Engineer's Office, Thornley Colliery.

APRIL 30.—**Tunbridge Wells.**—PAINTING.—For decorations at Friendly Society's Club. Steward at Club.

MAY 1.—**Llangunnor.**—WALLS.—For erecting walls round graveyard at Philadelphia, Llangunnor. Mr. W. E. Jones, "Bronhaul," Nantycaws, Carmarthen.

MAY 1.—**Rochdale.**—POST OFFICE.—Erection of a new Post Office at Rochdale, for the Commissioners of H.M. Office of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1. Deposit £1 1s. (made payable to the Secretary).

MAY 4.—**Denver.**—ADDITIONS.—For alterations and additions to College Farm House, Denver, Norfolk, for the C.C. Mr. Victor Playle, County Land Agent, Shirehouse, Norwich. Deposit £1 1s.

MAY 5.—**Bury St. Edmunds.**—HOUSES.—Erection of 24 houses (in two lots of 12 each) on the Grove Park Estate, for the T.C. Mr. Roland H. Beaumont, Borough Surveyor, Town Hall, Bury St. Edmunds.

✱MAY 5.—**Reigate.**—EXTENSIONS TO BUILDINGS.—Extensions to buildings in connection with the electricity undertaking, for the B.C. of Reigate. Consulting Engineer, Mr. C. H. Wordingham, C.B.E., M.Inst.C.E., 7, Victoria-street, London, S.W.1. Deposit £3 3s. Extra copies £1 1s. each.

MAY 7.—**Chelmsford.**—PAINTING, &C.—Painting and repairs at the Isolation Hospital, Baddow-road, for the Joint Hospital Board. Mr. A. G. Maskell, Clerk, 12, New London-road, Chelmsford. Deposit £1 1s.

✱MAY 11.—**Brighton.**—HOUSES.—Erection of 93 houses on the portion of the Queen's Park Housing Site, fronting to Pankhurst avenue, Kemp Town, for the County Borough Council of Brighton. Mr. Jas. H. Rothwell, Town Clerk, brighton. Deposit £1.

MAY 11.—**Sheffield.**—TELEPHONE EXCHANGE.—Erection of the new Central Telephone Exchange, Sheffield, for the Commissioners of H.M. Office of Works. Contracts Branch, H.M. Office of Works, King Charles-street, London, S.W.1. Deposit £1 1s. (made payable to the Secretary).

NO DATE.—**Ayrshire**—HOUSES.—Erection of a number of second-hand corrugated iron houses in Dailly District, for the South Ayrshire Collieries, Ltd. Company, 19, Waterloo-street, Glasgow.

NO DATE.—**Batley.**—EXTENSION.—Extension of clothing factory at Batley, for Messrs. Geo. Jessop & Sons, Ltd. Messrs. W. Hanstock & Son, architects, Batley.

✱NO DATE.—**Chesham.**—ALTERATIONS AND ADDITIONS.—Alterations and additions to the Chesham Cottage Hospital, Bucks. Messrs. Kemp & How, FF.R.I.B.A., 4, Bloomsbury-square, London, W.C. Deposit £2 2s.

NO DATE.—**Doncaster.**—SHOP.—Erection of shop and office premises in St. Sepulchre Gate, for Ald. W. D. Borrill, Messrs. B. D. Fairbank & Son, architects, 1, Bank-street, Bradford.

NO DATE.—**Emsworth.**—HOUSE.—Erection of residence in Warblington-road, Emsworth, for Lieut. E. C. Cordeaux, R.N. Mr. J. Auty, architect, 16, Queen-street, Emsworth.

NO DATE.—**Kippax.**—PARSONAGE.—Erection of Parsonage at Great Preston, Kippax. Mr. Fred Scatchard, architect, Midland Bank Chambers, Castleford. Deposit £2 2s.

NO DATE.—**Mexborough.**—ADDITIONS.—For additions to Montagu Hospital, Mexborough. Mr. Donald Wilson, Secretary.

NO DATE.—**Reading.**—HOUSES.—Erection of 64 houses on the Shinfield-road housing site, for the T.C. Borough Accountant, Valpy-street, Reading. Deposit £2 2s.

✱NO DATE.—**Upton Park and East Ham.**—PAINTING.—For painting "The Albion" Hotel, Boleyn-road, Upton Park; "The Spotted Dog," Upton Park; and "The Castle" Tavern, Barking-road, East Ham. Box 363, Office of *The Builder*.

NO DATE.—**Wheatley.**—CLUB.—Erection of Club premises, Wheatley. Mr. Blythe Richardson, architect, Doncaster. Deposit £2 2s.

FURNITURE, MATERIALS, etc.

APRIL 23.—**Eccles.**—ROAD MATERIAL.—Supply to the T.C. of (1) 5,266 tons of tarred slag and (2) 600 tons of red metal or shale. Borough Engineer, Town Hall, Eccles. Deposit £2 for 1 and £1 for 2.

APRIL 23.—**Glasgow.**—MATERIALS.—Supply of materials required by the Electricity Department for one year. Mr. R. B. Mitchell, Engineer, 57, Waterloo-street, Glasgow.

APRIL 23.—**Glasgow.**—MATERIALS.—Supply of materials for one year to the Sewage Department. Mr. W. S. Tennant, General Manager, Sewage Department, 3, Dundas-street, Glasgow.

APRIL 23.—**Great Yarmouth.**—MATERIALS.—Supply to the T.C. of 2,500 tons 1½ in. broken Guernsey granite, 1,500 tons 2 in. broken Guernsey granite, 500 tons granite chippings. Mr. S. P. Thompson, Borough Engineer, Town Hall, Great Yarmouth.

APRIL 23.—**Kidderminster.**—MATERIALS.—Supply of highway materials to the T.C. Mr. J. Hawcroft, Borough Engineer, Town Hall, Kidderminster.

APRIL 23.—**Milnrow.**—MATERIALS.—Supply of road and other materials to the U.D.C. Mr. A. S. Whipp, surveyor, Milnrow.

APRIL 24.—**Wallasey.**—PITCHING.—Supply of 2,000 tons of rock pitching for foundations, for the T.C. Borough Engineer, Wallasey.

APRIL 24.—**Northfleet.**—MATERIALS.—Supply of road materials to the U.D.C. Mr. J. A. Mitchell, surveyor.

APRIL 24.—**Sevenoaks.**—MATERIALS.—Supply of tools, drain pipes, cement, tar and tarvia, oils, &c., for the U.D.C. Mr. E. Pawley, Surveyor, Council Offices, Argyle-road, Sevenoaks.

APRIL 25.—**Dewsbury.**—GRANITE SETTS.—Supply of 500 tons of granite setts to the T.C. Mr. H. Dearden, Borough Engineer, Dewsbury.

APRIL 25.—**Glasgow.**—MATERIAL.—Supply to the Baths and Washhouses Department of plumbers' furnishings, brass furnishings, ironmongery, paints and varnish, joiner work, &c. Mr. R. B. Thomson, General Manager, 38, College-street, Glasgow.

APRIL 25.—**Littlehampton.**—TAR.—Supply of 20,000 gallons of tar to the U.D.C. Mr. L. G. Dashper, Surveyor, Littlehampton.

APRIL 25.—**Rushden.**—MATERIALS.—Supply of granite and slag to the U.D.C. Mr. W. B. Madin, Surveyor, Council Buildings, Rushden.

APRIL 25.—**Warrington.**—PAVING.—Supply of 100 tons of hard York or similar stone crazy paving, for the T.C. Mr. Andrew M. Ker, Borough Engineer, Warrington.

APRIL 26.—**Edinburgh.**—FURNISHING.—For furniture and furnishings for Nurses' Rest Home, Seafield Poor House, Leith, for the Edinburgh Parish Council. Mr. Pringle, at the Institution.

APRIL 27.—**Blean.**—ROAD MATERIAL.—Supply and delivery of road material to the R.D.C. Mr. F. A. Ware, surveyor, Eddington, Herne Bay.

APRIL 28.—**Silsden.**—MATERIALS.—Supply of road materials to the U.D.C. Mr. Chas. Lowe, Surveyor, Town Hall, Silsden.

APRIL 28.—**Swindon.**—MATERIALS.—Supply of various materials to the T.C. Mr. S. C. Baggott, Borough Surveyor, 34, Regent-circus, Swindon.

APRIL 30.—**Edinburgh.**—MATERIALS.—Supply to the Midlothian C.C. of paints, bricks, pipes, cement, fencing material, &c. Mr. A. G. G. Asher, County Clerk, County Buildings, Edinburgh.

MAY 1.—**Hadleigh.**—ROAD MATERIALS.—Supply to the U.D.C. of 350 tons of 2 in. and 25 tons of 1 in. granite, and hire of a 10-ton steam roller. Mr. H. W. F. Grimwade, Clerk, Hadleigh, Suffolk.

NO DATE.—**Lydd.**—TAR.—Supply of 200 barrels of tar, to the T.C. Mr. T. W. C. Laslett, Borough Surveyor, Lydd.

ENGINEERING, IRON AND STEEL

APRIL 23.—**Cradley Heath.**—BRIDGE.—Reconstruction of Lodge Forge Bridge crossing the River Stour at Lodge Forge-road, Cradley Heath, for the Rowley Regis U.D.C. and the Halesowen R.D.C. Council House, Old Hill, Staffs.

APRIL 23.—**Dublin.**—STEELWORK.—Supply of steelwork for bridge for the Midland Great Western Railway Co. Chief Engineer, Broadstone Terminus, Dublin. Deposit £1.

APRIL 23.—**Enfield.**—FENCING.—Supply and erection at North Enfield Recreation Ground of about 737 ft. run of wire net fencing, for the U.D.C. Mr. H. R. Crabb, Surveyor, Public Offices, Enfield.

APRIL 23.—**Halifax.**—ELECTRICITY WORKS EXTENSION.—Supply and erection of steelwork required in new boiler foundations and reconstruction of battery room floor at the Electricity Works, Halifax. Borough Engineer, Crossley-street, Halifax. Deposit £2 2s.

APRIL 23.—**Johannesburg.**—PIPING, &C.—For supply of wrought-iron piping and fittings at Yeoville Reservoir, for the T.C. Department of Overseas Trade, 35, Old Queen-street, S.W.

APRIL 23.—**London.**—BOILERS.—Supply to the L.C.C. of three new "Lancashire" boilers (with fittings) for Abbey Mills Pumping Station. Chief Engineer, Old County Hall, Spring-gardens, S.W.1. Deposit £2.

APRIL 24.—**Liverpool.**—WATER MAIN.—Supply to the T.C. of (3) steel plate girder bridge to carry a total distributed load of 40 tons, clear span 71 ft.; (6) two steel tubes of 40 in. internal dia., each of a total weight of about 18 tons. Water Engineer's Office, Alexandra-buildings, 55, Dale-street, Liverpool. Deposit £2 2s. each.

APRIL 24.—**London.**—RAILWAY MATERIAL.—Supply to the Great Indian Peninsula Railway Co. of (1) Locomotive boilers; (2) steel work for bridges; (3) carriage door handles, hinges, &c.; (4) miscellaneous articles and materials. Mr. R. H. Walpole, Secretary, 48, Copthall-avenue, E.C.2. Charges, £1 for (1); 10s. for (4); 7s. 6d. for (2) and (3).

APRIL 24.—**Stockport.**—STEEL WORK.—For steel frame work and reinforced concrete floors for branch premises and emporium, Gorton-road, North Reddish, for the Stockport Industrial and Equitable Co-operative Society, Ltd. Mr. S. Taylor, General Secretary, Stockport. Deposit £5.

APRIL 25.—**Hull.**—BALLAST-WASHING MACHINE.—For ballast-washing and screening machine, for the T.C. Mr. F. W. Bricknell, Borough Engineer, Hull.

APRIL 25.—**London.**—COLUMNS.—Supply of 220 cast iron moulded columns for covered ways at Tooting Bec Mental Hospital Extension, for the Metropolitan Asylums Board. Office of the Board, Victoria Embankment, E.C.4. Deposit £1.

APRIL 25.—**London.**—ELECTRIC LIGHTING.—Installing electric lighting in the Staff Blocks, &c., at the Grove Fever Hospital, Tooting, for the Metropolitan Asylums Board. Office of the Board, Victoria-embankment, E.C. Deposit £1.

APRIL 25.—**Whins.**—RESERVOIR.—For reservoir for the Harrington and District Joint Water Committee. Messrs. Taylor & Wallin, engineers, Newcastle-on-Tyne. Deposit £3 3s.

APRIL 26.—**Bangor (Ireland).**—GASHOLDER.—For erection of three lift spiral guided gasholder, for the U.D.C. Mr. B. Mitchell, Gas Engineer, Bangor. Deposit £5.

APRIL 27.—**Birmingham.**—HEATING INSTALLATION.—Installation of new heating systems in Blocks 4 and 6 at the Dudley-road Hospital, for the Board of Guardians. Mr. James Curtis, Clerk, Union Offices, Edmund-street, Birmingham. Deposit £5 5s.

APRIL 27.—**London and Maidenhead.**—HEATING.—For heating installations at (1) Holborn Telephone Exchange, London, (2) Post Office, Maidenhead. Contracts Branch, H.M. Office of Works King Charles-street, S.W.1. Deposit £1 1s. each contract.

APRIL 27.—**Torquay.**—CRANE.—Supply of one 15-ton overhead travelling crane for Newton Abbot Power Station, for the T.C. Mr. H. F. G. Woods, Borough Electrical Engineer, Town Hall, Torquay. Deposit £2 2s.

APRIL 28.—**Guernsey.**—TOWER.—Erection of concrete or stone tower on Roustel Rock, for St. Peter's Port Harbour Committee. Mr. J. H. Duquemin, States Engineer, Guernsey.

APRIL 28.—**Maryport.**—BRIDGE.—Construction of ferro-concrete bridge across the River Ellen, for the Cumberland C.C. Mr. W. H. Butler, County Surveyor, The Courts, Carlisle. Deposit £2.

APRIL 30.—**Cardiff.**—TRAMWAY RAILS.—Supply of 275 tons of steel tramway rails to the T.C. City Engineer, Cardiff.

APRIL 30.—**Littleton.**—PLANT.—Supply of coal and ash handling plants, auxiliary boiler, piping, &c., at Littleton Pumping Station, for the Metropolitan Water Board. Mr. Henry H. Stilgoe, Chief Engineer, New River Head, Rosebery-avenue, E.C.1. Deposit £1 1s.

APRIL 30.—**Macclesfield.**—ENGINES.—Supply of two 25 b.h.p. suction gas or crude oil engines to the T.C. Mr. J. H. Edmondson, Sewage Manager, Prestbury, Macclesfield.

APRIL 30.—**Walton-le-Dale.**—RESERVOIR.—Construction of reservoir of 750,000 gallons capacity, in reinforced concrete, at Gough-lane, Bamber Bridge, for the U.D.C. Mr. G. J. Gibbs, 7, Lune-street, Preston. Deposit £5.

MAY 1.—**Burton-on-Trent.**—BRIDGE.—Widening of Burton Bridge across the valley of the River Trent in ferro-concrete on the Hennebique system, for the T.C. Mr. George T. Lynam, Borough Engineer, Town Hall, Burton-upon-Trent. Deposit £10.

MAY 2.—**London.**—RAILWAY MATERIAL.—Supply to the Bombay, Baroda, and Central India Railway Co. of wheels and axles. Mr. S. G. S. Young, Secretary, 91, Petty France, S.W.1. Charge 10s.

MAY 2.—**Salford.**—FOOTBRIDGE.—For footbridge over River Irwell at Gerald-road, for the T.C. (1) Masonry, concrete steps, concrete and rock asphalte bridge flooring and street works; (2) steelwork. Borough Engineer, Town Hall, Salford. Deposit £2 2s. each contract.

MAY 3.—**Chile.**—TOOLS, &C.—Supply to Chilean State Railways of machinery and tools, nuts and bolts, &c. Dept. of Overseas Trade, 35, Old Queen-street, S.W.

MAY 5.—**Gravesend.**—BALLAST.—For licences to work four steam dredgers for raising ballast from the River Thames below Gravesend for a term of three years from August 1, 1923. Chief Engineer, Port of London Authority, Trinity-square, E.C.3.

MAY 5.—**Tewkesbury.**—REFUSE DESTRUCTOR.—For erection of refuse destructor for the T.C. Mr. W. Ridler, Borough Surveyor, Tewkesbury.

✱MAY 5.—**Guildford.**—ARTIFICERS WORKS.—Contracts from May 22, 1923, as Memorandum, Contract 3, Guildford, by letter Commanding Royal Engineer, or in person between the hours of 10 a.m. and 3 p.m., up to May 5, 1923, at Royal Engineer Office, New-road, Woolwich, S.E.18.

MAY 7.—**Basford.**—HEATING INSTALLATION.—Installation for heating and domestic hot-water supply for Institution at Bulwell, for the Basford B.G. Mr. W. C. C. Hawtayne, consulting engineer, 9, Queen Street-place, E.C. Deposit £5 5s.

JUNE 1.—**Calcutta.**—AERIAL ROPEWAY.—Supply and installation of an aerial ropeway for the removal of the City refuse, for the T.C. Mr. James R. Coats, Chief Engineer, Central Municipal Office, Calcutta.

JUNE 26.—**Queensland.**—PUMPING PLANT.—Supply to the Metropolitan Water and Sewerage Board of Brisbane, Queensland, of pumping plant for Mount Crosby Pumping Station. Department of Overseas Trade, 35, Old Queen-street, S.W.

AUGUST 31.—**Chile.**—HARBOUR WORKS.—Extension of the mole of the Port of Valparaiso and complementary harbour works, depots, &c., for the Navy. Chilean Legation in London.

NOVEMBER 30.—**Sydney.**—BRIDGE.—Construction of the superstructure and substructure of a cantilever bridge across Sydney Harbour; also an alternative tender for the construction of the superstructure and substructure of an arch bridge across Sydney Harbour. Agent-General for New South Wales, Australia House, Strand, W.C.

ROAD, SANITARY, AND WATER WORKS.

APRIL 23.—**Lesmahagow.**—WATER MAIN.—Laying about 1,600 yds. of cast-iron pipes and special castings, in connection with the water supply of Lesmahagow, for the Water Committee. Messrs. Warren & Stuart, civil engineers, 94, Hope-street, Glasgow. Deposit £1 1s.

APRIL 23.—**Litherland.**—SEWER.—Constructing a stoneware pipe sewer at Hawthorne-road, for the U.D.C. Mr. Geo. Ponsford, Surveyor, Council Offices, Sefton-road, Litherland.

APRIL 23.—**Musselburgh.**—ROADS.—Construction of Macadam roadway, at West Holmes-gardens, for the T.C. Burgh Surveyor, Musselburgh.

APRIL 23.—**Newport (Mon).**—CONSTRUCTION OF FOOTPATH.—For constructing for the Newport Borough Council a raised footpath under the railway bridge near Dudley-street. Borough Engineer, Municipal Chambers, Corn-street. Deposit £1 1s.

APRIL 23.—**Rowley Regis.**—ROADS.—Excavating for and paving an area of about 5,104 super. yds. with 5 in. Leicestershire stone setts on a 6 in. bed of reinforced concrete, for the U.D.C. Council House, Old Hill, Staffs.

APRIL 23.—**Swansea.**—CONSTRUCTION OF SEWERS.—For constructing for the Swansea R.D.C. the following sewerage works:—(*a*) Sewerage of Lougher, including construction of (1) 176 yards of 6 in. earthenware sewer, (2) 8,696 yards of 9 in. earthenware sewer, (3) 185 yards 9 in. cast-iron outfall sewer, (4) 1,184 yards 12 in. earthenware sewer, (5) 651 yards 15 in. earthenware sewer, (6) 255 yards 18 in. earthenware sewer, (7) 507 yards 15 in. cast-iron outfall sewer, with all necessary manholes, flushing chambers, ventilating shafts and concrete sedimentation tanks. (*b*) Groves-end and Waungron sewerage works: The laying and construction of (1) 2,159 yards 9 in. earthenware sewer, (2) 330 yards 12 in. earthenware sewer, (3) 1,500 yards 15 in. earthenware sewer, (4) 406 yards 15 in. cast-iron outfall sewer with incidental works as in contract (*a*). (*c*) Brynteg and Gorseinon sewerage, including the construction and laying of (1) 1,645 yards of 9 in. earthenware sewer, (2) 370 yards of 12 in. earthenware sewer, with incidental construction thereto. Special conditions as to workmen employed, the work being connected with unemployment relief. Separate tenders for each of the three contracts. Mr. T. Trevor Williams, Engineer and Surveyor to the Council, Alexandra-road, Swansea. Deposit £2 2s. in each case.

APRIL 24.—**Chatham.**—WOOD PAVING.—Repairing certain carriageways with creosoted yellow deal blocks, for the T.C. Mr. R. L. Honey, Borough Engineer, Chatham.

APRIL 24.—**Irlam.**—SEWAGE WORKS.—Construction of Sewage Disposal Works on the activated sludge principle, for the U.D.C. Mr. W. H. Gamble, Surveyor, Council Offices, Irlam. Deposit £5 5s.

APRIL 24.—**Salford.**—ROADS.—Paving of two streets with stone setts, for the T.C. Borough Engineer, Town Hall, Salford.

APRIL 24.—**Southport.**—ROADS.—Relaying of tramways and street pavings, Mornington-road, Derby-road, and Sussex-road, Southport, for the T.C. Mr. A. E. Jackson, Borough Engineer, Town Hall, Southport. Deposit £3 3s.

APRIL 25.—**Birmingham.**—SEWERS.—Construction of about 2,600 yards of brick and concrete sewers, and 1,350 yards of stoneware pipe sewers, &c., for the T.C. Mr. H. H. Humphries, City Engineer, The Council House, Birmingham. Deposit £2.

✱APRIL 25.—**Nuneaton.**—ROAD WORK.—Widening and improving of the Bucks Hill Improvement (Unemployment Relief Works), and other works incidental thereto, for the Town Council, Borough of Nuneaton. Borough Engineer and Surveyor, Municipal Offices, Nuneaton. Deposit £2 2s.

APRIL 26.—**Breconshire.**—BRIDGE AND ROAD ALTERATION.—For carrying out for the Breconshire County Council work on the Senny Bridge, Ystradgynlais-road, known as the Gilwirych Diversion. Mr. W. L. Harpur, County Surveyor, County Offices, Brecon.

APRIL 26.—**Bridlington.**—WATER MAIN.—Laying about 464 yards of 3 in. cast-iron water main at Flamborough, for the R.D.C. Messrs. Elliott & Brown, Burton Buildings, Parliament-street, Nottingham. Deposit £1 1s.

APRIL 26.—**East Ham.**—ROADS.—Reconstruction with tar macadam of the footpaths and roadways at "Harts" Sanatorium, Woodford Green, for the B.C. Borough Engineer, Town Hall, East Ham.

APRIL 27.—**Highworth.**—SEWAGE DISPOSAL.—For the construction of sewage tanks, filters, &c., at Stratton Saint Margaret, for the R.D.C. Messrs. Berrington, Son & Watney, Prudential Chambers, Wolverhampton. Deposit £5 5s.

APRIL 27.—**Saltcoats.**—SEA WALL, &C.—Erection of sea wall (1,080 ft.), for the T.C. Mr. Hugh Thomson, architect, 60, Hamilton-street, Saltcoats.

APRIL 28.—**Glasgow.**—ROADS.—Paving of several streets in the city with compressed rock asphalte. Office of Public Works, 64, Cochrane-street, Glasgow.

APRIL 28.—**Surrey.**—ROADS.—Construction of the new arterial roads known as (1) the Kingston by-pass, and (2) the Sutton by-pass, both in the County of Surrey, for the Ministry of Transport. Chief Engineer, Roads Department, Ministry of Transport, 7, Whitehall-gardens, S.W.1. Deposit £100 each scheme.

APRIL 30.—**Hayes.**—ROADS.—Making-up Angel-lane, Station-road (part of), and Coldharbour-lane (part of), for the U.D.C. Mr. D. C. Fidler, Surveyor, Council Offices, Hayes.

APRIL 30.—**Pressall.**—SEWERAGE SCHEME.—For the carrying out of a sewerage scheme. Mr. Arthur Race, 11, Richmond-terrace, Blackburn.

APRIL 30.—**Sutton-in-Ashfield.**—SEWAGE DISPOSAL.—Alterations to existing settling tanks, construction of gauging chamber, two settling tanks, and eight circular bacteria beds, &c., for the U.D.C. Messrs. Willcox & Raikes, 63, Temple-row, Birmingham. Deposit £10.

MAY 2.—**Hendon.**—SEWER.—(*a*) Construction of 1,470 yds. of 12 in. and 9 in. stoneware pipe sewer at Headstone-lane, and (*b*) construction of 800 yds. of 9 in. stoneware pipe sewer at Pinner-hill-road, for the R.D.C. Mr. H. W. Rackham, Surveyor, Council Offices, Stanmore. Deposit £3 3s.

✱MAY 2.—**Hove.**—WOOD PAVING.—Providing and laying wood paving in New Church-road, between Walsingham-road and Boundary-road (about 23,657 yards super.) for the Borough Council of Hove. The Borough Surveyor, Borough of Hove, Town Hall, Hove.

Competitions.

(*See Competition News, page* 634.)

Auction Sales, Tenders, etc.

✱APRIL 24, 25 & 26.—**West Norwood, S.E.**—Messrs. Veryard & Yates, F.A.I., will sell without reserve, *re* the dissolution of partnership of the Hamilton Trading Co., at Dunbar Works, Dunbar-street, new and partly used stores, tools, paints, varnishes, motor spares, &c.; also factory premises, with dwelling house, offices, &c. Auctioneers: 365, Norwood-road, S.E. 27.

APRIL 25.—**Beachley, near Chepstow.**—Messrs. Bruton, Knowles & Co. will sell by direction of the Disposal and Liquidation Commission at the Stores' Yard, National Shipbuilding Yard, Beachley, building goods, ironmongery, &c. Also on April 26, at the Ordnance Emergency Depot, Naas Crossing, National Filling Factory, Quedgeley, corrugated iron buildings, railway track, barbed wire fencing, &c. Auctioneers, Albion-chambers, Gloucester.

✱APRIL 26.—**Romford, Essex.**—Messrs. Fenn, Wright & Co. will sell, by direction of the Disposal and Liquidation Commission, at Government Instructional Factory, Hare Hall, Gidea Park, Romford, Essex, valuable building materials, painters' and plumbers' goods, &c. Auctioneers, 146, High-street, Colchester.

MAY 1.—**Hanworth, near Feltham.**—Messrs. H. W. Smith & Moon in liquidation *re* Gay & Co. (Builders), Ltd., and *re* Hanworth Public Utility Society, Ltd., by order of the liquidators will sell at Tudor Estate, Hanworth, near Feltham. Sale of the builders' and contractors' plant, material, sheds, machinery and effects, "Winget" block-making plant, household furniture and fittings, poultry houses, appliances and utensils, an excellent 160 ft. laying house. Auctioneers, 6, Great James-street, Bedford-row, London, W.C.1.

✱MAY 1.—**255, Clapham-road, Stockwell, S.W.**—Messrs. Veryard & Yates will sell without reserve, timber, fittings and building materials, arising from demolition of buildings. Auctioneers: 365, Norwood-road, S.E. 27.

✱MAY 1 & 2.—**Porton, near Salisbury.**—Messrs. Gallaway & Co. will sell by direction of the Disposal and Liquidation Commission, at Porton Experimental Station, Porton, near Salisbury, 6 miles from Salisbury, 2 miles from Porton Station (Main Line Southern Railway), valuable machinery and plant and miscellaneous material. Auctioneers, 6, Queen-street, Exeter.

✱MAY 2, 3 & 4.—**Balham High-road, S.W.**—Messrs. Veryard & Yates will sell, at Ravenswood-road, electrical equipment, also patent No. 32425, machine tools, &c. Auctioneers: 365, Norwood-road, S.E. 27.

MAY 3.—**London, W.**—Messrs. Knight, Frank & Rutley will sell, in the Hanover Estate Room, by direction of the Council of His Royal Highness the Prince of Wales, K.G., an important corner building site situated between Waterloo Bridge and Waterloo Station, and facing H.M. Stationery Office; also block of shops and business premises. Auctioneers, 20, Hanover-square, W.1.

✱MAY 3.—**Sutton, Surrey.**—Messrs. Fuller, Horsey, Sons & Cassell, will sell in lots at High-street, Sutton, Surrey, by order of Mr. Frank W. Wallis, receiver for the debenture holder. Engineering and foundry plant, rainwater pipes, gutters, &c., time recorder, typewriter, office furniture, and other effects. Auctioneers, 11, Billiter-square, E.C.3.

MAY 15.—**Rayleigh, Essex.**—Messrs. Hampton & Sons will sell at the St. James's Estate Rooms, 20, St. James's-square, S.W.1, the fully-equipped Freehold, known as Rayleigh Brick and Tile Works. Auctioneers, 20, St. James's-square, S.W.1.

✱MAY 23.—**London, W.1.**—Messrs. Knight, Frank & Rutley will sell (by direction of Sir Samuel Barrow, J.P.), as a whole, or in eleven lots, at the Hanover-square Estate Room, the picturesque residential property, known as the Grove Estate, Carshalton, Surrey. Auctioneers: 20, Hanover-square, W.1.

Public Appointments.

APRIL 25.—**Wycombe, Bucks.**—Messrs. Fuller, Horsey & Co. will sell in lots *re* Wycombe Aircraft Constructors, Ltd., High Wycombe, Bucks, by order of the Receiver, Mr. G. A. Brigstocke, C.A., for the Debenture holder, on the premises, woodworking machinery, stock of new furniture, nearly new office furniture. Auctioneers, 11, Billiter-square, E.C.3.

APRIL 28.—**Leicester.**—Principal required by the City of Leicester Education Committee for the School of Arts and Crafts. The Registrar, School of Arts and Crafts, Leicester.

✱NO DATE.—**London, W.C. 2.**—ARCHITECTURAL AND ENGINEERING ASSISTANTS.—Senior and Junior Assistants required. Applicants should have served with H.M. Forces. The Secretary (S. 1), Air Ministry, Kingsway, London, W.C. 2.

Staff Dinner.

The annual staff dinner, marking the completion of the fifty-first year of the Limmer & Trinidad Lake Asphalt Co., Ltd., took place at the Restaurant Frascati recently. Mr. George Mitchell (Chairman) and his colleagues, Messrs. Bond and Marriott, comprising the Board of Management, paid tribute to the excellent working of the company due to the *esprit de corps* which was so evident among the firm's staff.

Proposed Bernhardt Memorial Village.

A proposal which, it is reported, may materialise in the near future, involves the building of a new village near to Paris, as a memorial to Sarah Bernhardt. The village is to be designed by M. Pierre Sardou, son of Victorien Sardou, and it is intended that it shall be reserved for artists, actors, and other intellectual workers who are at present suffering from the housing shortage and high rents in Paris itself. The idea is said to have originated with the Society "Renaissance des Cités," which has been engaged in the reconstruction of the devastated communes.

WATER FITTINGS.

We have received the following letter from Mr G. P. Warner Terry, Secretary, the British Waterworks Association:—

The Standing Committee on Water Regulations of this Association have had their attention called to references which have appeared in the Press alleging that this Association have prepared specifications for water fittings which will entail unnecessary expense to the public. These allegations are quite erroneous and are evidently based upon misapprehension. A draft Model Code of By-laws and Regulations for the Prevention of Waste, Contamination or Misuse of Water, including Specifications of Standard Water Pipes and Fittings, is now before the Ministry of Health and awaits their sanction, so that the Model By-laws may be available for adoption by local authorities, as are various other model by-laws relating to buildings, slaughter-houses, markets, and many other matters.

The Legislature has imposed upon water undertakings the power and duty of making by-laws and regulations for the prevention of waste, undue consumptions, misuse or contamination of water; and this is all that the Standing Committee of the British Waterworks Association are seeking to secure. The Association do not imagine that there can be any valid objection to those objects, which were shown in so many instances to be of supreme importance during the drought of 1921.

Apart from faulty distribution by leaky mains (which is, of course, the direct concern of the water undertakings), the principal cause of waste of water is the existence of faulty fittings in houses and buildings; and the Association are only attempting to lay down such minimum requirements in regard to the manufacture of fittings as will ensure an efficient article at a minimum cost to the public, whilst preventing the necessity for constant repairs which are such a source of expense and annoyance to consumers.

It may be mentioned here that the revision of previously existing standard specifications of water fittings was undertaken by the Standing Committee in 1921 at the express instance of the Department of Building Materials Supply of the Ministry of Health, with the double object of excluding badly made fittings which are likely to cause waste, and of encouraging mass production to standard patterns, so as to reduce the cost of efficient fittings to the public. It can be emphatically stated that taps and other fittings that comply with the specifications can be obtained at a considerably lower price than many imperfect fittings such as ought not to be allowed. There is no desire to interfere with fittings in actual use, but merely to provide that fittings for new buildings or new fittings for replacing old fittings should be of a character to reduce waste to a minimum.

The public hardly realise the enormous volumes of water which are wasted by defective fittings, entailing loss to the public by depleting existing sources of supply, by involving unnecessary pumping and other charges and additional impounding reservoirs and other works. Thus both capital and maintenance expenditure is unnecessarily increased at a time when the financial resources of the country are least able to bear the burden.

The Standing Committee is composed of representatives of the British Waterworks Association, the Water Companies' Association, the Institution of Water Engineers, the Royal Institute of British Architects, the Worshipful Company of Plumbers, the Institute of Plumbers, and the Royal Sanitary Institute. It has done its best to meet criticism from every quarter by conference with manufacturers and others; and it is prepared to meet in conference representatives of property owners or other interests that may think themselves aggrieved. The Standing Committee feel convinced that any opposition offered to the Model By-Laws must be founded upon complete misunderstanding of the objects they have in view.

PROPOSED NEW BUILDINGS & OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ACCRINGTON.—An inquiry by the Ministry of Health into the application of the Corporation for sanction to borrow £22,130 for destructor purposes has been conducted by Mr. J. C. Dawes.

ADWICH.—A cinema is to be erected at Carcroft from plans of Mr. J. B. Richardson, architect, Doncaster.

AIRDRIE.—At the Dean of Guild Court linings were passed as follows:—A. M. Morrison, Caledonian Wire Rope Works, for six-apartment bungalow in Drumbathie-road; John Cuthill Sword, for motor garage and workshop at junction of Graham-street and Gartlea-road; and the Burgh War Memorial Committee to erect the town's war memorial at the entrance to Airdrie House-avenue.

AMMANFORD.—The Council has called for submission of plans and estimates for district sewage scheme.

BATLEY.—At the annual vestry meeting of the Parish Council it was decided to proceed with work in connection with the church war memorial scheme. This is to take the form of several improvements to the chancel, the estimated cost of which is between £250 and £300.

BEDWELLTY.—The U.D.C. has applied for sanction to erect 150 additional houses, chiefly at Blackwood. The Secretary of Bethany Baptist Church, Cefn Forest, Bedwellty, has agreed to site offered for new church, and plans have been passed by U.D.C.

BELFORD.—Plans passed by R.D.C.: Five houses, West-street, for Mr. Tully.

BIGGLESWADE.—Plans passed by R.D.C.: Offices of Messrs. Jordan & Son, of Sandy.

BIRKENHEAD.—Plans passed: Conversion of Hamilton Memorial Church, Laud-street, into parish hall; garage, 8, Parkend-road; alterations, "Claughton Grange," Devonshire-road; two pairs of semi-detached houses, Ashburton-road; two pairs of semi-detached houses, Temple-road; additions to cold storage premises, Camden-street.

BLYTH.—The T.C. are negotiating with the Public Works Loan Board for loans of £16,000 for street improvement works, and £15,000 for housing purposes.

BOURNEMOUTH.—Mr. A. W. Brightmore, Inspector of the Ministry of Health, has held an inquiry at Bournemouth into the application by the Corporation for sanction to borrow £53,500 for the construction of cliff protection works east of Boscombe Pier.——The Housing Committee has been asked to report on a resolution recently passed by the Town Council favouring the erection of 100 additional houses at Winton.

BRAY.—Councillor P. Collins, M.P., has completed the taking over of the Bray Head Park, and proposes, when political affairs are more settled, to construct there a White City on the lines adopted in English resorts, and including a dancing hall, scenic railway, and other forms of amusement. His agents are Messrs. Thos. Allen & Sons, 73, Middle Abbey-street, Dublin.

BRIDGEND.—The U.D.C. is to carry out Glanogwr sewer repairs, improvement of Caroline-street and Nolton-street corner, widening of Nolton-street near the Rhiew, improvement of the Rhiew-passage, the renovation of Free Library, and has under consideration the purchase of sites for erecting covered carriage stands. The Ministry of Health has sanctioned the borrowing of £2,000 by the Bridgend and Cowbridge Board of Guardians for erection of boiler house and chimney stack. The U.D.C. is to borrow £5,700 for electrical plant installations, and is to lay mains for supply to Aberkenfig.

BURNLEY.—Plans passed:—Additions to Isolation Ward, Victoria Hospital, for the Trustees; garages, Duke-street, for Mr. S. Farrer; saw mill and timber sheds, Liverpool-road, Mersey-street, and Dorset-street, for Messrs. Holloway Bros.; alterations, 22, Plumbe-street, for Messrs. Adams' Stores; shop front, Market Hall, for Messrs. Warburton's, Ltd.

BUXTON.—The local Municipal Council has under consideration a scheme for erecting 40 parlour and non-parlour houses.

CAMBRIDGE.—Plans passed by T.C.:—Bungalow, Magrath-avenue, W. H. Stonebridge, 23, Hertford-street; house, Grantchester-road, Miss G. Oram, 4, Hardwick-street; bungalow, Hills-road, J. G. Frazer, c/o Rattee & Kett, Station-road; house, Wetenhall-road, T. Eastwell, 93, Sedgwick-street; house, Hills-avenue, A. G. Almond, 3, Regent-street; house, Highworth-avenue, H. E. Cook, 54, Cherryhinton-road; shop front, 294, Mill-road, L. G. Humphrey, 294, Mill-road; additions, Trafalgar-street, Stearn & Fenn, 3, Victoria-avenue; garage, Ferry-path, R. W. Sabberton, 28, Ferry-path; japanning shops, Carlyle-road, Cambridge & Paul Instrument Co., Chesterton-road; additions, Camford-road, Cambridge and Paul Instrument Co., Chesterton-road; additions, Harvey-road, Ashley Tabrum, Drosier House, Harvey-road; house, Highworth-avenue, R. E. Wisbey, 201, Chesterton-road; house, Hills-avenue, Miss C. Beavan, "Lion" Hotel; house, Highworth-avenue, R. Taylor, Chesterton Hall-crescent; bridge, 58, Trumpington-street, Master and Fellows, Corpus Christi College; addition to bakery, Parsonage-street, G. P. Hawkins, Ltd., Parsonage-street; additions, 17, Bateman-street, S. A. Fisk, 17, Bateman-street; alterations to stables, University Arms Hotel, Regent-street, M. D. Bradford, Brookland's-avenue; additions, 77, Garden-walk, E. Ginn, 77, Garden-walk; house, Storey's-way, C. T. R. Wilson, 14, Cranmer-road; additions and shop front, 34, Hills-road, G. Peck, 32, Hills-road; cottage, Hemingford-road, H. Thurlborn, 98, Ross-street; garage, 278, Hills-road, S. L. A. Wight, 289, Hills-road; house, Highworth-avenue W. Stevenson, Highworth-avenue; bungalow, Coniston-road, G. R. & H. B. Howes, Cherryhinton-road; garage, Hills-road, King & Harper, Bridge-street, garage, Hinton-avenue, Gipsy Smith, Hinton-avenue; garage, Luard-road, G. F. C. Gill, Cavendish-avenue; addition, "Light Dragoon" P.H., Panton-street, E. Lacon & Co., Ltd., Great Yarmouth; addition, "Wheatsheaf" P.H. High-street, E. Lacon & Co., Ltd., Great Yarmouth; house, Bentley-road, Mrs. Hartee, Newton-road.

CARDIFF AND DISTRICT.—The City Council has sanctioned the Markets Committee authorisation of completion of negotiations for purchase of Cycle-street property for cattle market extensions at estimated cost £61,000. An alternative scheme of establishing a cattle market at Newport-road Power Station site at estimated cost £106,000 is to be reported upon. The Electricity Committee has decided to purchase tramrails for laying of double track through Duke-street on completion of widening scheme. The G.W.R. Co. is to undertake by arrangement with the Corporation the relaying of Tyndall-street. The Corporation Building and Sites Committee have decided upon Newfoundland-road site for new secondary school for Maindee. Negotiations for school site at Grangetown are taking place.

CARDIGANSHIRE.—The County Main Roads Committee is to spend £500 on bridge repair in the Aberaynon Union. The Roads Committee has decided to purchase a motor car for roads surveyor. The Rhayader Council has notified Main Roads Committee that G.W.R. Co. seriously considers laying an additional railway line to run west of Rhayader to Cardiganshire Coast, and has invited local authorities to confer and offer the Company assistance in scheme. The County Roads Committee is inviting expert report on alternative quarry schemes at Hafon and Bronant, at which machinery installations to be made are respectively estimated at £25,000 and £16,000.

CHERITON.—Plans passed by U.D.C.: For H. G. Copping, alterations and new shop front at 85, High-street; for C. H. Houghton, two houses in Park-road; for W. G. Down, semi-detached house in Ashley-avenue; for F. E. Pilcher, alterations and additions to Lloyds Bank, Risborough-lane; for W. J. Church, two houses off Tile Kiln-lane.

CLIFFE.—Mr. and Mrs. G. W. Briggs, of Bridlington, have given a site at Cliffe on which to erect the proposed War Memorial Institute for the village.

CONSETT.—The U.D.C. has decided to clear and level a new site for a market.

DUNDEE.—Plans passed:—Beechwood-terrace, garage for H. Craigie Smith; Bingham-terrace, studio for W. R. Cuthbert; Brook-street, Broughty Ferry, shop for The Buttercup Dairy Co., Ltd.; Cedar-road, garage for W. M. Chalmers; Elizabeth-street, alterations for J. F. D. Johnston; Home-street, Broughty Ferry, dwelling-house for R. J. Todd; Lammerton-terrace, houses for James K. Anderson; Magdalen Green, tennis pavilion for Dundee Town Council; Mains Loan, additions to Laundry for John G. Sibbald & Son; South Tay-street, alterations for J. Pennycook.

EBBW VALE.—The Ebbw Vale Co.'s recreation ground scheme is to be put upon a self-supporting basis, and Miners' Welfare Fund is asked to contribute cost of constructing new swimming baths and children's recreation ground layout. Plans have already been approved.——The entire remodelling of the railway station has been authorised by the G.W.R. Co., at a cost of £11,000.

ETON.—Plans passed by R.D.C.: Sanitary accommodation at Dorset-avenue, for the Slough Trading Co., Ltd.; house and shop, Bath-road, Burnham, for Mr. F. Smith; conversion of granary into bakehouse, &c., Oak End Way, Gerrards Cross, for Mr. G. Newman; alterations and additions at "Redcliffe," Marsham Waye, Gerrards Cross, for Mr. A. Kingscote; bungalow, Bath-road, Burnham, for Mr. Smith; additions to lodge, The Grove, Langley, for Mr. Cescinsky; bungalow, Shedsbrook-road, Wexham, for Mr. F. M. Batten; addition to "Dumb-bell" Hotel, Taplow, for Messrs. Burge & Co., Ltd.; 50 cottages on the Slough Trading Company's Housing Site, Farnham-road; bungalow in Stomp-road, Burnham, for Mr. G. Nicholls.

FARNHAM.—A public meeting of owners and ratepayers has passed a resolution urging the U.D.C. to provide a new market at an estimated cost of £3,000.

FLIXTON.—Plans for the rebuilding of the "Greyhound Hotel" were passed by the Manchester County Magistrates recently. The building will be carried out in a half-timbered manner in character with the surrounding district, and will comprise, on the ground floor, two smoke rooms, billiard room, vault, and living accommodation. It is proposed to enlarge the bowling green and to build a new bowl house with open verandahs; also to erect a large garage to accommodate five cars. The architect for the scheme is Mr. Benjamin Waterhouse, A.M.S.A., architect to Threlfall's Brewery Co., Ltd., Salford.

GELLYGAER.—Owing to inability of contractor decided upon to carry out erection of 60 houses at Bargoed for U.D.C., application for sanction to re-invite tenders for same has been made. The Ministry of Health has sanctioned acquisition of land at Fochriw for building of additional houses as soon as possible. The Powell Duffryn Coal Co. are reported to have in consideration the building of workmen's dwellings at Deri. The Council is to purchase fire escape valued at £275.

HARPENDEN.—Plans passed by U.D.C.:—Additions to premises, Leyton-road, for Mr. J. E. West; additions to "Rossmore," Rosebery-avenue, for Mr. A. Burnett; motor-house and workshop at "Greenbury," Salisbury-avenue, for Mr. E. H. Steward.

HARROW.—St. Andrews has now been constituted a separate parish, and an effort is to be made to raise £6,000 with a view to building a permanent church.

HAZEL GROVE.—Plans passed by U.D.C.: House, Bramhall Park-road, for Messrs. F. Hallows & Co.; eight houses in Handley-road, Bramhall, for Messrs. Eyre & Brady; house, Chester-road, for Mr. S. Bennett; two houses, Ack-lane, for Messrs. Rawlinson Bros.; two houses, Offerton-green, for Mr. T. Greenwood; six houses, North Park-road, Bramhall, for Residents, Ltd.; house, North Park-road, for Residents, Ltd.; house, Carr Wood-road, for Mrs. J. F. Lee; two houses, Torkington-road, for Mr. Bayley and Mrs. Downs.

HEXHAM.—The Parochial Church Council is appealing for £2,000 to carry out certain work necessary for placing the tower, south transept and choir of the Abbey in a safe condition.——Plans passed by U.D.C.: House, for Mr. Toulmin, by Messrs. Hanson & Son; motor house at Causey-hill, for Mr. J. R. Heslop; motor house, Woodbine Villa, for Mr. W. Wallace.

HOVE.—Plans passed by T.C.: Mr. E. Wallis Long, for Mr. W. W. Phillips, alterations and additions, 9, Wilbury-gardens; Mr. W. H. Overton, for Mr. C. Burt Brill, motor garage, 62, Wilbury-road; Messrs. J. & M. Beswarick, for Mr. N. Joseph, pair of houses and garages, Holland-road; Mr. F. W. Hamilton, conversion into flats, 40, Sackville-gardens; Messrs. E. Gladman & Sons, pair detached houses and garages, Boundary-road; Messrs. Freeman, Hardy & Willis, Ltd., alterations, 44, Church-road; Messrs. J. Parsons & Sons, for Rev. A. R. Read, addition, St. Leonard's Church Hall, Glebe-villas; Messrs. E. Winter & Sons, store, Albany Mews; Mrs. A. Yeats, conversion into flats, 55, St. Aubyns; Mr. W. Whiteman, for Mr. Simkins, bungalow, Glebe-villas; Messrs. C. J. Kerridge & Co., Ltd., for Lt.-Col. J. Entrican, motor garage, 59, Wilbury-avenue; Messrs. Bostels, Ltd., for Mr. A. H. Bartlett, addition, 17, Selborne-road; Mr. V. Wilkins, for Mr. P. Bates, detached house, New Church-road; Messrs. T. Garrett & Son, for Mr. H. R. Malby, detached house, Kingsway; Mr. T. H. Buckwell, for Mr. F. C. Spencer, pair detached bungalows, Wish-road; Mr. G. Gilliam, for Messrs. Gilliam & Hollamby, pair semi-detached bungalows, Hallyburton-road (south side); Mr. W. H. Overton, for Mr. F. Hibell, two pairs semi-detached houses, Montefiore-road; Mr. W. H. Overton, for Mrs. Claudet, addition, 41, Brunswick-square; Mr. W. H. Overton, for Mr. T. H. Elliott, two pairs semi-detached villas, Wilbury-crescent; Mr. A. T. Witherden, motor garage, Frith-road; Messrs. T. Garrett & Son, for Mrs. Gates, motor garage, "Morningside," Westbourne-villas; Mr. P. B. Hunter, for Mr. J. Rowe, motor garage, Seafield garages; Messrs. J. Parsons & Sons, conversion into flats, "Brooker Hall," New Church-road.

HULL.—Plans passed by T.C.: J. A. Smith, house, Newland Park; L. Nowell, house, Hamlyn-avenue; W. H. Kaye, house, Berkeley-street; J. F. H. Osborne (Mrs.), house, Cottingham-road; E. M. Whiting, shop, Anlaby-road; I. Bentley, alterations, Anlaby-road and Midland-street; F. Hunter, alterations, "Halstead," Cottingham-road; — Antcliffe, dairy, 33, Exmouth-street; F. Plummer, 8, Webster and G. Cullington, shop and offices, King Edward and Story-streets; Anglo-American Oil Co., Ltd., garage, workshops, &c., West Dock-street; Dr. R. W. Eddie, garage, Holderness-road and Westcott-street; D. Baxter, billiard saloon, Walton-street; Hull Brewery Co., Ltd., alterations and additions, "Wheatsheaf Hotel," Prospect-street; Trustees, Portobello P.M. Chapel, institute, Holderness-road and Portobello-street; Humber Slate Works, offices, Sculcoates-lane; J. R. Young, additions, Clough-road; Storry, Smithson & Co., Ltd., shed, Bankside; J. M. Barnett, club, Reynoldson-street; C. F. Gilboy, warehouses, 730, Holderness-road; British Oil & Cake Mills, Ltd., laboratory, &c., Foster-street; T. Cross, office and workshop, Regent-street; British Petroleum Co., Ltd., office, stores, &c., Dairycoates; C. F. Pardoe, workshops, Clarence-street and Alma-street; G. & T. Earle, Ltd., office additions, Wilmington; W. H. Kaye, shed, Berkeley-street; Major & Co., Ltd., office, stores, &c., Air-street; Reckitt & Sons, Ltd., stores, office, &c., Chapman-street; J. Just, store-room, 221, Buckingham-street; H. M. Harrison and E. S. Walker, garages, 86 and 88, Park-avenue; Humber Flock Co., additions, 26½ Hessle-road; Trigg & Spruit, outbuildings, Marne-street; E. A. Steele, shop front, 121, Newland-Avenue.

IFFLEY.—The Thames Conservancy Board has decided to place sluices in the old lock at a cost of £1,875.

KING'S LYNN.—Plans passed:—House, St. Lewis-street, for R. W. Fayers & Son.

LAINDON.—The Essex Licensing Authority has confirmed the licence of the "Fortune of War" to be removed to new premises to be constructed. Mr. R. Banks Marten is the architect.

LETCHWORTH.—The U.D.C. has decided to prepare the necessary plans and specifications for new sewers and sewage disposal works.

LLANDOVERY.—A bequest of £3,500 having been made in the will of late inhabitant of town for erection of Cottage Hospital, the T.C. has appealed for further funds to put the work in hand.

LONDON (GREENWICH).—The B.C. has decided to construct a convenience at the junction of Westcombe Hill and Charlton-road, at an estimated cost of £3,000.

MANCHESTER.—Plans passed:—Alterations to premises 1,287, Ashton New-road, Openshaw; alterations to offices, Fairfield-street, Ardwick; garages, stable, and workshop, off Aden-street, Ardwick; alterations to premises, Tipping-street, Ardwick; shop and house, Victoria-avenue and Hill-lane, Blackley; workshop, Heywood-street, and Huxley-avenue, Cheetham;

* See also our List of Contracts, Competitions, etc.

alterations to premises, 54–56, Market-street; addition to wire works, Clapham-street, Moston; addition to boiler shop, Chapter-street, Newton Heath; engineering works, Boundary-street, Newton Heath; two houses, Wilton-road, Crumpsall; dwelling-house, Polefield-road, Blackley; alterations to the "Shakespeare Hotel," Fountain-street and Phœnix-street; alterations to "Clarence Inn," Slater-street and Sudell-street; garage, Hough-street, Newton Heath; shops, Oxford-road and Sidney-street, Chorlton-upon-Medlock; conversion of house into shop and house, 12, Sanby-road, Gorton; two houses, Allandale-road, Rusholme; lock-up shop, Stockport-road, Levenshulme; addition to shop and house, 152, Stockport-road, Levenshulme; chapel, Beresford-road and Slade-grove, Rusholme; alterations to premises, Mount-road and Heathcote-road, Gorton; dwelling-house, Norman-road, Rusholme; additions to house, Claremont-road and John-street, Rusholme; dwelling-house, Chandos-road South, Chorlton-cum-Hardy; two houses, Wilbraham-road, Chorlton-cum-Hardy; two houses, Chandos-road South, Chorlton-cum-Hardy; house, Manor-drive, West Didsbury; store, Lower Moss-lane and City-road, Hulme; garage, &c., Stanley-grove, Moss-lane West, Moss Side; storeroom, &c., Percy-street, Hulme; alterations and additions to works, Cross-street and Lloyd-street, Hulme; two houses, Lansdowne-road, West Didsbury; fourteen houses, College-drive, Whalley Range, Withington; alterations to shop, 192, City-road, Hulme; dwelling-house, Manor drive and Macefin-avenue, West Didsbury; meeting hall, Raby-street and Moss-lane East, Moss Side; house, Wilbraham-road and Alexandra-road South, Withington; shops and offices, Liverpool-road and Southern-street.

Melton Mowbray.—The U.D.C. have passed a resolution authorising the construction of a reservoir of 1,000,000 gallons capacity and an engine and pump capable of pumping 10,000 gallons per hour. It is also proposed to construct a small high level reservoir and small pumping station to supply the higher portion of the district. The engineers of the scheme are Messrs. W. H. Radford & Son, Nottingham, in conjunction with the Council's Surveyor, Mr. Jarvis.

Merthyr Tydfil.—The Library Committee has selected site for new Heolgerrig Free Library below Penyrheol House. The architect has delivered plans. The Treharris Welfare Committee has notified B.C. of willingness to lay out children's playground near public park, subject to certain land arrangements. The Committee will also build new road to run through the park to proposed new ground as soon as Council sanction to route has been received. Ministry of Health has sanctioned building of 50 additional houses by B.C. at Heolgerrig and tenders will shortly be invited.

Monmouthshire.—The County Education Committee has decided upon the following works, subject to obtaining suitable land: To erect a permanent school between Markham Village and Argoed to serve both districts; to convert Larkfield, Chepstow, into a central school at estimated cost £5,000; to convert Lawn House, Rhymney, into a central school at estimated cost £6,000; erect at Pontllanfraith at estimated cost £15,000 a central school; convert at estimated cost £1,500 Blaenavon Hillside school into a central school.

Neath.—A deputation from the T.C. has waited on Ministry of Health for permission to borrow and expend on purchase and reconstruction of Gnoll House, £15,000. It is understood that favourable consideration will be received, and an advance made for the conversion of the house into school or hospital and grounds as a public park.

Newport (Mon.).—Lord Tredegar has granted suitable land to St. Woolas Parish, Newport, for erection of proposed new church rooms. Archdeacon O. H. Griffiths, M.A., is vicar of the church. It has been reported to B.C. that negotiations preparatory to putting in hand High-street widening scheme work are nearly completed. The Water's-lane mission room and cottages are to be converted into parochial buildings, at an estimated cost of £5,000. The central hall, the main feature of scheme, will seat 500 people, and smaller rooms will be built around this. The work will be carried out by St. Luke's and St. Woolas churches, Archdeacon Griffiths, M.A., vicar. New works are to be erected by the Finlay Conveyor Co., near Transporter bridge, site having been recently acquired. The Newport Box Works Co. have acquired land for erection of new works from the Development Association. The site is near Town Dock.

Newton Abbot.—The G.W.R. Co. has decided to reconstruct the station at the cost of about a quarter-of-a-million pounds.

Northampton.—The T.C. has decided to erect on the Balfour-road site 44 tenement dwellings, each to contain two rooms and usual out offices, in blocks of four, viz., two tenements on ground floor and two on first floor, from plans by the Borough Engineer, Mr. Alfred Fidler, Guildhall, Northampton.——Plans passed by T.C.: Garage and workshop, 121 & 123, Wellingborough-road, for Mr. W. B. Harris; extension to factory, Horseshoe-street, for Messrs. J. & G. H. Roe; new w.c. and drains, Sheep-street, for Messrs. H. Hamp & Sons; two new houses, 45 & 47, Sandringham-road, for Mr. W. A. Coppin; alterations, 113, Overstone-road, for Messrs. The Linen Thread Co.; storage shed, Kingswell-street, for Messrs. Bassett, Lowke, Ltd.; new drainage, 37 & 39, St. James'-street, for Mr. C. Humphreys; garage, Queen's park-parade, for Mr. C. Pickering; additions to premises, 31, Wood-street, for Mr. J. W. Tebbutt; new house, High-street, Kingsthorpe, for Mr. S. Irons; new house, Garrick-road, for Mr. A. C. Coles; new house, The Avenue, Dallington, for Mrs. Buszard; new house, Thursby-road, for Mr. S. Walker; new house, Loyd-road, for Mr. Sharpe; new billiard room, Abbey-street, for St. James' W.M.C. and Institute; extension to shop premises, 123, Kettering-road, for Messrs. Clarke & Son; new church and school, Southampton-road, Far Cotton, for the Trustees of the Primitive Methodist Church; boiler house, Roe-road, for Mr. W. King; new scullery, 10, Priory-terrace, for Mr. Butler; new motor house, 1, Garrick-road, for Mr. H. Dunning; new house, Thursby-road, for Mr. W. H. Foster; new w.c., Margaret-street, for Mr. Slaymaker; extension of shop, 67, St. James'-road, for Mr. F. Clarke; three new dwelling houses, Cedar-road, for Mr. S. G. Sale; alteration to premises, St. James'-road, for Mr. E. Dennis; garage, 28, Abingdon-grove, for Mr. Burman.

Odney.—The Thames Conservancy Board has decided to reconstruct Odney Weir at a cost of £5,600.

Oswestry.—The railway station is to be improved by the G.W.R. Co., at an estimated cost of £61,000.

Petersfield.—Messrs. St. George-Moore & Latrobe-Bateman, of 91, Victoria-street, S.W., have reported to the Rural District Council on the extension of the water supply and installation of further pumping plant, at an estimated cost of £6,550.

Pontypridd.—The U.D.C. has under consideration alternative schemes for electricity works extension and installations respectively, estimated at £33,750 and £21,825. In the event of the year schemes being temporarily shelved an alternative scheme estimated at £6,000 that does not involve plant purchase will be considered.

Ramsbottom.—Plans passed by U.D.C.: Pair of semi-detached houses in Longsight-road for Mr. John Cassel, contractor; a detached villa in Bolton-road West, for Mr. John Wilkinson.

Ramsgate.—It is proposed to erect a new structure in place of the Marine Pier, which was burnt down some years ago.

Rhondda.—A welfare scheme toward which initial grant of £5,000 has been received has been formulated for the Ton Pentre district. Mr. John Griffiths, M.E., is the leading spirit in the scheme.

Rhymney.—On the recommendation of the architect the Trustees of the Workmen's Library and Institute will undertake erection of two new floors, one for baths and one for billiards, at estimated cost £11,500, so that present ground floor may be converted into public hall. General meeting has assented to this scheme. The U.D.C. has advanced for sanction plans for erection of ten additional municipal houses.

Salford.—Plans passed:—Construction of firelighter factory, Montford-street; sawdust separating chamber, Langworthy Saw Mills, Vere-street; sanitary accommodation, "Wellington Hotel," Ellor-street; open-air school, Bolton-road, Pendleton; sanitary accommodation, St. Thomas's Schools, Broughton-road; alterations to spirit store, Wilmslow-street, Salford; St. Thomas's Schools, Primrose Hill, Pendleton; construction of sanitary accommodation; "Horse Shoe Inn," Coke-street, Broughton; garage, 69, Acresfield-road, Pendleton; alterations to Hope Hospital, Stott-lane, Pendleton; additions to "Royal Hotel," Eccles New-road, Pendleton.——The T.C. has appointed a Special Committee to consider a scheme for developing the lower end of Chapel-street, with a view to converting it into a modern thoroughfare, and incidentally to remove Trinity Market to another site. It is suggested that the Trinity Market site would be suitable for a large hotel building, for which, owing to the shortage of accommodation in the adjoining borough of Manchester, there is an urgent need.

Sawbridgeworth.—Plans passed by U.D.C.: Pair of houses in Springhall-road, for Mr. A. F. Harryman; house and shop at Walnut Tree corner, for Mr. J. T. Chapman.

Southwell.—An inquiry has been held into the proposal of the R.D.C. to carry out a water scheme at an estimated cost of £21,000.

Stretford.—Plans passed by U.D.C.: Pavilion, off Kendal-road, for Manchester Ship Canal Co.; four houses, Rye Bank-road, for Messrs. Grimshaw & Thomas, Ltd.; 16 houses, Reynolds-road and Morland-road, for Mr. Douglas Gosling; 12 houses, Milton-road and Talbot-road, for Messrs. G. H. Brown & Son; canteen, Trafford Power Station, for the S.U.D. Council (Electricity Dept); additions to works, Trafford Park, for the Metropolitan-Vickers Electrical Co., Ltd.

St. Albans.—The Guardians have appointed a committee to consider the question of purchasing Tudor House, Alma-road, for conversion into cottage homes. The R.D.C. has asked its engineers, Messrs. Howard, Humphreys & Sons, to submit a revised estimate for a water supply scheme to Wheathampstead.

St. David's.—The Pembrokeshire C.C. L.G. Acts Committee has granted sanction to P.C. to apply for sanction of loan of £1,000 for erection of offices.

Swansea.—Plans passed by T.C.: Two houses, Haslemere-road, for Messrs. T. & G. Spragg; alterations and additions, Cradock-street, for Mr. A. R. Way; warehouse, Orchard-street, for Mr. S. Chapman; lock-up shop, Tydraw-road, Bonymaen, for Mr. D. James; two houses and shop, Pleasant-street, Morriston, for Mr. D. Francis; surgery, 24, Mackworth-terrace, for Dr. E. J. G. Jones; garage, 35, Trafalgar-terrace, for Mr. S. James; two houses, Middle-row, for Mr. E. Thomas; additions, Llangyfelach-road, Treboeth, for Mr. D. Lewis; two houses, Maple-grove, for Messrs. Jones & Reed; two houses, Pinewood-road, for Mr. J. R. Cheley; additions, Hendrefoilan-road, for Mr. C. S. Thomas; two houses, Boarsplit-lane, West Cross, for Mr. H. P. Honey; two houses, Tycoch-road, Sketty, for Messrs. Ace & Mansel; house, Maple-grove, for Mrs. Curran; two houses, Maple-grove, for Messrs. Jones & Potter; two houses, Queen's-road, Coedsaeson, for Messrs. Paupel & King; house, Middle-road, for Mr. D. J. Evans; bungalow, Mynydd-garn-llwyd-road, for Mr. R. Jones; cottage, Gower-road, for Mr. Thomas Stone; store, Clase-road, Morriston, for Mr. N. Davies; alterations and additions, 13, Oxford-street, for Messrs. Lipton, Ltd.; shop and offices, 13 and 14, Gower-street, for Mr. A. Ruck; five bungalows, New-street, off Overland-road, Mumbles, for Mr. Ivor Beynon; house, Thistleboon, Mumbles, for Mrs. J. Eastman; garage, 6, Uplands-terrace, for Mr. S. C. Kirby; additions, Compass Inn, Llangyfelach-road, Pentre, for the Swansea United Breweries Co.; additions, Birchgrove-road, Lonlas, for Mrs. E. Thomas; four houses, Overland-road, Mumbles, for Mr. B. F. Hoppe; new mill, North Dock, for Messrs. Weaver & Co., Ltd.; additions, 13, William-street, for Mr. A. Reed; two houses, Sketty-road, for Messrs. Evans & Harris; house, Langland, for Mr. H. Williams; house, Cecil-street, for Mrs. A. Hughes; bungalow, Penlan-road, Treboeth, for Mr. T. Cousins; house, Mynydd-garn-llwyd-road, Treboeth, for Mr. D. James; house, Parkwern-road, for Mr. S. M. T. Jenkins; house, West Cross-lane, for Mrs. Joyce; house, West Cross-lane, for Mr. W. C. Hopton; bungalow, Limeslade Bay, for Mr. J. W. Thomas; alterations, 21, Oxford-street, for Messrs. F. W. Woolworth & Co., Ltd.; house, Trewyddfa-road, for Mr. D. Davies; two houses, Queen's-road, for Miss Williams; three bungalows, Field 208, Thistleboon, for Mr. C. J. Floyd.

Tenby.—Plans passed: Alterations and additions to Cottage Hospital for owners and trustees. Architect, Mr. Lionel R. Wood, J.P., Tenby.

Thornaby-on-Tees.—Plans passed by T.C.: bungalow off Thornaby-road, for Mr. A. E. Langcake; and bungalow at Thornaby-road and Millbank-lane, for Mr. J. Draper.

Tiverton.—The Town Council has approved the building of a new bath, and a committee has been formed to go into the matter in detail.

Treddegar.—Renovations estimated at £900 are to be carried out to St. James' Parish Church (the Rev. John Evans, B.A., vicar).

Wakefield.—Plans passed by T.C.: Mr. Fred Simpson, additions and alterations to Eagle Brewery, Thornhill-street, for Messrs. Beverley Bros., Ltd.; Mr. J. P. Firth, additions to Bective Mill, Alverthorpe, for Messrs. Harrap Bros.; Messrs. Bell & Kay, house, Barnsley-road, Milnthorpe, for Mr. G. Glover; Mr. Herbert Dobson, house and shop, Avondale-street, for Mr. C. N. Cockell; Mr. J. R. Lister, six houses, Oxford-road, St. John's Estate; Messrs. Massie & Holdsworth, house, Eastmoor-road, for Miss Peaker; Mr. R. B. Hirst, house, dairy, and motor garage, Peterson-road; Messrs. Bell & Kay, alterations to property in Wood-street, for the West Riding Building Society; Mr. W. Harold Watson, garage and alterations and additions to lock-up shop and store, Westgate-and White's-yard, for Mr. J. R. Strickland; Mr. Herbert Dobson, two houses, Horbury-road, for Mr. A. Lockwood; Mr. Herbert Dobson, two houses, Grosvenor-street, for Mr. J. Lovell; Mr. W. Harold Watson, two houses in Bromley Mount, for Mr. J. Ormiston; Mr. W. Harold Watson, house, Carr-lane, for Mr. J. Clayton.

Watford.—In connection with the Peace Memorial Hospital scheme, the building is estimated to cost £60,000, towards which £40,000 has been subscribed. Plans have been prepared by the architect, Mr. Wallace Marchmont, 267, Kingston-road, Merton, S.W.

Weymouth.—Plans passed by T.C.:—Shop front, 32, St. Mary-street, J. B. Sharman, for Lennards, Ltd.; alterations, Franchise-street, S. Jackson & Sons, for A. Burridge; villa, Spa-road, S. Jackson & Sons, for W. Parsons; bungalow, Cross-road, G. A. Andrews, for W. Moore; baker's shop and store, Church-passage, S. Jackson & Son, for E. Barlow; two villas, Roman-road, for A. G. Lunn.

Whitby.—It is intended to make an appeal for the sum of £2,000 towards the repair of the fabric of St. Mary's Parish Church, Whitby.

Windsor.—The Prince of Wales, last week, presided at a meeting in support of an appeal for funds to enable a scheme for building a nurses' hostel to be carried out. Certain funds from the Windsor War Memorial and British Red Cross are available for this scheme, which will set free the isolation block, at present used by the nursing staff, owing to lack of other accommodation.

Worthing.—The Town Council has under consideration certain proposals recently put forward by the Special Development Committee, which include (1) the construction of a shore end pavilion on the pier and an approach road, at an estimated cost of £25,000 (the pavilion will contain a concert hall with seating accommodation for 1,000); (2) the extension of the Parade bandstand enclosure to accommodate 3,000 deck chairs, the estimated cost being £18,000; and (3) the laying-out of Denton Recreation Ground and Beach House Park, at an estimated cost of £9,000.

York.—It has been decided to get out plans for the New South Bank Memorial Church.

FIRES.

Dumfries.—The mansion house of East Tinwald, near Dumfries, has been destroyed by fire. The house was tenanted by Colonel and Mrs. Hannan.

Hackney.—Serious damage has resulted from an outbreak of fire at a portion of the extensive premises of the Metwell Stone China Co., 528, Kingsland-road, Hackney.

Kirkland.—Damage to the amount of £1,200 has been caused by fire at Stoney, Wath Farm, Kirkland, Lamplugh. The farm is in the occupation of Mr. Septimus Wilson, and the premises are owned by Mrs. Potter, Crossdale, Ennerdale.

Newcastle-on-Tyne.—The engineering works of Messrs. McGhee & Spencer, in Erick-street, Newcastle, have been damaged by fire.

Southport.—A chocolate factory of Messrs. Holland has been destroyed by fire.

Business Openings.

His Majesty's Consul-General at New Orleans, United States of America (Major Braithwaite Wallis) reports an opening in Florida for cement.

The officer in charge of His Majesty's Senior Trade Commissioner's office in Canada at Montreal reports that a dealer in building materials in Montreal is desirous of getting into touch with United Kingdom suppliers of brick. United Kingdom firms interested should apply to the Department of Overseas Trade, 35, Old Queen Street, Westminster, S.W.1, quoting reference 10933/E.D./M.C.2.

PRICES CURRENT OF MATERIALS.*

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.—Ed.]

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge. £ s. d.

Best Stocks 4 2 0
Second Hard Stocks 3 17 0

Per 1,000. Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons, at King's Cross	2 15 0	Best Blue Pressed Staffs.	9 11 6
Do. grooved for plaster	2 17 0	Do. Bullnose ..	10 1 6
Do. Bullnose ..	3 10 0	Blue Wire Cuts	7 11 6

Best Stourbridge Fire bricks:—
2½ in. ..... 11 3 0 3 in. 13 2 0

Glazed Bricks—

Best White Ivory, and Salt Glazed Stretchers ..	22 0 0	D'ble Str'tch'rs	30 10 0
		D'ble Headers	27 10 0
		One Side and two Ends ..	31 10 0
Headers	21 10 0	Two Sides and one End	32 10 0
Quoins. Bullnose and 4½in. Flats	28 10 0	Splays and Squints	30 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours, Hard Glaze; £5 10s. extra over white.

BREEZE CONCRETE SLABS.

Delivered London.

	s. d.		s. d.
2 in. per yd. super	2 1	3 in. per yd. super	2 9
2½ in. ,,	2 5	4 in. ,,	3 7

	s. d.		
Thames Ballast	13 6	per yard.	delivered 2 miles radius Paddington.
Pit Sand	16 0	,, ,,	
Thames Sand	16 6	,, ,,	
Best Washed Sand	16 6	,, ,,	
½ in. Shingle for Ferro-Concrete	14 0	,, ,,	
¼ in. ,, ,,	15 0	,, ,,	
¾ in. Broken Brick	10 6	,, ,,	
Pan Breeze	5 6	,, ,,	

Per ton delivered in London area in full van loads.

Best Portland Cement, British Standard Specification Test £2 18 0 £3 5 3
51/- alongside at Vauxhall in 80-ton lots.
Ferrocrete per ton extra on above 10 0
Roman Cement 8 15 0
Parian Cement 5 13 0
Keene's Cement, White 5 8 0
,, ,, Pink 5 8 0
Plaster, Coarse, Pink 3 0 0
,, ,, White 3 12 6
,, Fine 5 12 0
Sirapite, Coarse 3 12 0
,, Finish 4 0 0
Grey Stone Lime 2 11 3
Chalk Lime 2 11 3
Best Ground Blue Lias Lime 2 14 0
Hair 17 0 0
Granite Chippings 1 12 0

Note.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months, carr. pd.

Stourbridge Fireclay in s'cks 37s. 6d. per ton at rly. dpt.

STONE.

Bath Stone—delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube ..... s. d. 2 11
Do. do. delivered in railway trucks at Nine Elms, L. & S.W.R., per ft. cube 3 2
Do. do. delivered on road wagons at Nine Elms Depot 3 3

Portland Stone—
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, L. & S.W.R., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube 4 5
Do. do. delivered on road wagons at above stations, per ft. cube 4 6
White basebed, 3d. per ft. cube extra.
Note.—½d. ft. cube extra for every foot over 20-ft *average*, and ¼d. beyond 30 ft.

Hopton-Wood Stone.
Delivered at any Goods Station, London.

Small random blocks, up to 10 ft. cube. Per ft. cube	7/-
Random blocks from 10 ft. and over ,,	17/-
Sawn two sides ,,	27/-
Sawn three or four sides ,,	32/-

York Stone, Blue—*Robin Hood Quality.*
Delivered at any Goods Station London. s. d.

6 in. sawn two sides landings to sizes (under 30 ft. super.)	Per Ft. Super	5 3
6 in. rubbed two sides, ditto	,,	5 9
3 in. sawn two sides slabs (random sizes)	,,	2 1½
2 in. to 2½ in. sawn one side slabs (random sizes)	,,	1 5½
1½ in. to 2 in. ditto, ditto	,,	1 3

Hard York—
Delivered at any Goods Station London.

Scappled random blocks	Per Ft. Cube	5 6
6 in. sawn two sides landing to sizes (under 40 ft. super.)	Per Ft. Super	5 4½
6 in. rubbed two sides ditto	,,	6 0½
4 in. sawn two sides slabs (random sizes)	,,	2 10
3 in. ditto. ditto	,,	2 5
2 in. self-faced random flags ..	Per Yard Super	7 11

ARTIFICIAL STONE.

Delivered in London Area in full van loads. s. d.

Plain	per ft. cube	6 9
Moulded	,, ,,	8 3
Cills	,, ,,	9 0

WOOD.

GOOD BUILDING DEAL.

Inches.	per stan.	Inches.	per stan.
4 × 11	£34 0	3 × 6	£23 0
4 × 9	34 0	3 × 11	32 10
4 × 8	26 0	2 × 11	32 10
4 × 7	24 0	3 × 9	30 0
3 × 8	24 0	2½ × 9	30 0
3 × 7	23 10	3 × 4½	22 10
2½ × 7	23 10	3 × 4	22 10

WOOD (*Continued*).

PLANED BOARDS.

1 × 11 .... 38 10 1 × 9 .... 36 0

PLAIN EDGE FLOORING.

Inches.	per sq.	Inches.	per sq.
¾	20/-	1¼	32/6
⅞	22/-	1½	37/6
1	25/-		

TONGUED AND GROOVED FLOORING.

Inches.	per sq.
1	25/-
1¼	32/6
1½	37/6

MATCHINGS (BEST).

Inches	per sq.
¾	17/6
⅞	22/-
1	25/-

Inches BATTENS s. d.
1 × 2 ..... 2 4 per 100 ft.

SAWN LATHS.

Per bundle 0 2 9
Dry Wainscot Oak, per ft. super, as inch ..... 0 2 0 to 0 2 6
¼ in. do. 0 1 6 to 0 2 0
Dry Mahogany—Honduras, Tabasco, African, per ft. super, as inch .... 0 1 9 to 0 2 6
Cuba Mahogany ..... 0 3 6 to 0 4 0
Teak (Rangoon, Moulmein or Java), per load .... 45 0 0 to 50 0 0
American Whitewood planks, per ft. cube .. 0 14 0 to 0 16 0
Best Scotch Glue, per cwt. 4 10 0 to —
Liquid Glue, per cwt. .. 4 7 0 to 5 10 0

SLATES.

1st quality slates from Bangor or Portmadoc in truck loads delivered London area. Per 1,000 of 1,200.

	£ s. d.		£ s. d.
24 by 12	37 12 6	18 by 10	21 2 6
22 by 12	34 0 0	18 by 9	18 12 6
22 by 11	31 5 0	16 by 10	17 12 6
20 by 12	29 15 0	16 by 8	13 15 0
20 by 10	25 12 6		

TILES.

Per 1,000 f.o.r. London.

	£ s. d.
Best machine-made tiles from Broseley or Staffordshire district	5 7 6
Ditto handmade ditto	5 12 6
Ornamental ditto	5 17 6
Hip and valley tiles (per dozen) { Hand made	0 9 6
{ Machine made	0 9 0

METALS.

Joists, Girders, &c., to London Station per ton—

	£ s. d.
R. S. Joists, cut and fitted	13 10 0
Plain Compound Girders	15 10 0
,, Stanchions	17 10 0
In Roof Work	20 10 0

MILD STEEL ROUNDS.
To London Station, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
¼ in.	16 10 0	⅝ in. to ½ in...	13 10 0
⅜ in.	14 10 0	¾ in. to 2½ in...	13 0 0

Wrought-Iron Tubes and Fittings—
(Discount off List for lot of not less than £7 net value delivered direct from Works, 2½ per cent. less above gross discounts, carriage forward if sent from London Stocks.)

	Tubes.	Fittings.	Flanges.
Gas	60 %	60 %	70 %
Water	55 %	55 %	65 %
Steam	50 %	50 %	60 %
Galv'd—			
Gas	47½ %	47½ %	57½ %
Water	41½ %	41½ %	51½ %
Steam	35 %	35 %	45 %

C.I. Half-Round Gutters—London Prices, ex Works.

Per yd. in 6 ft. lengths.	Gutters.	Angles and Nozzles.	Stop Ends.
3 in.	1/0½	10d.	3d.
3½ in.	1/1½	11½d.	3d.
4 in.	1/2½	1/0½	3d.
4½ in.	1/3½	1/2½	3½d.
5 in.	1/5½	1/3½	4½d.

O.G. Gutters.

3 in.	1/4½	1/1½	3d.
3½ in.	1/4½	1/1½	3d.
4 in.	1/5½	1/2½	3d.
4½ in.	1/7½	1/4½	3½d.
5 in.	1/11	1/7	4½d.

RAIN-WATER PIPES, &c.

Per yd. in 6 fts.	Pipe.	Bends, stock angles.	Branches stock angles.
2 in. plain	1/5½	1/0½	1/6½
2½ in. ,, ...	1/7½	1/2½	1/10
3 in. ,, ...	1/11½	1/6	2/3
3½ in. ,, ...	2/3½	1/9½	2/7
4 in. ,, ...	2/8½	2/1½	3/1½

L.C.C. Coated Soil Pipes—London Prices ex works.

	Pipe.	Bends, stock angles.	Branches, stock angles.
	s. d.	s. d.	s. d.
2 in. per yd. in 6fts plain	2 9	2 0	2 5
2½ in. ,, ,,	3 2½	2 3	3 0
3 in. ,, ,,	3 9½	2 5	3 8
3½ in. ,, ,,	4 2	3 0	4 3
4 in. ,, ,,	4 7½	3 5	4 11

L.C.C. Coated Drain Pipes—London Prices ex works.

	Pipe.	Bends, stock angles.	Branches, stock angles.
	s. d.	s. d.	s. d.
3 in. per yd. in 9ft. lengths	4 3	5 1	8 0
4 in. ,, ,,	5 8	6 0	10 3
5 in. ,, ,,	6 10	10 5	16 6
6 in. ,, ,,	8 0	13 0	21 3

Per ton in London.

Iron—	£ s. d.		£ s. d.
Common Bars	13 0 0	to	14 0 0
Staffordshire Crown Bars—good merchant quality	14 0 0	..	15 0 0
Staffordshire "Marked Bars"	16 0 0	..	17 0 0
Mild Steel Bars	12 10 0	..	13 10 0

METALS (*Continued*).

	£ s. d.		£ s. d.
Steel Bars, Ferro-Concrete quality, basis price	12 10 0	..	13 10 0
Hoop iron, basis price	15 10 0	..	16 10 0
,, Galvanised	29 0 0	..	31 0 0
Soft Steel Sheets, Black—Ordinary sizes to 20 g...	14 10 0	..	15 10 0
,, ,, ,, 24 g...	15 10 0	..	16 10 0
,, ,, ,, 26 g...	17 10 0	..	18 10 0
Sheets Flat Best Soft Steel, C.R. & C.A. quality—Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g...	20 10 0	..	21 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 22 g. and 24 g.....	21 10 0	..	22 10 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 26 g...	23 10 0	..	25 10 0
Flat and Galvanised Corrugated Sheets—Ordinary sizes, 6 ft. to 9 ft. 20 g.....	20 0 0	..	21 0 0
Ordinary sizes, 6 ft. to 9 ft. 22 g. and 24 g...	20 10 0	..	21 10 0
Ordinary sizes, 6 ft. to 9 ft. 26 g.....	22 10 0	..	23 10 0
Sheets Galvanised Flat, Best quality—Best Soft Steel Sheets, 6ft. by 2ft. to 3ft. to 20g. and thicker ..	22 10 0	..	23 10 0
Best Soft Steel Sheets, 22 g. and 24 g. ..	23 10 0	..	25 10 0
Best Soft Steel Sheets, 26 g.	25 0 0	..	26 0 0
Cut Nails, 3in. to 6 in. (under 3in. usual trade extras.)	21 10 0	..	23 0 0

Metal Windows—Standard sizes suitable for complete houses, including all fittings, painting two coats, and delivery to job, average price about 1/4 to 1/7 per foot super.

LEAD, &c.

Delivered in London.

	£ s. d.		
Lead—Sheet, English, 4 lb. and up	36 0 0	..	—
Pipe in coils	36 10 0	..	—
Soil Pipe	39 0 0	..	—
Compo pipe	40 0 0	..	—

Note—Country delivery, 30s. per ton extra; lots under 5 cwt., 1s. 6d. per cwt. extra. Cut to sizes, 2s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	24 10 0	..	—
Do., ex country, carriage forward ..... per ton	25 10 0	..	—

PLUMBERS' BRASS WORK.
Delivered in London.

New River Screw Down Bib Cocks for Iron.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
2/5	2/7½	6/4	12/9	20/6 each

New River Screw Down Stop Cocks and Unions

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
3/2	5/2	7/8	14/6	25/- each

New River Screw Down Main Ferrules.

½ in.	¾ in.	1 in.
3/3½	5/-	9/8½ each

Caps and Screws.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
7d.	1/1½	1/8	4/9½	6/6½ each

Double Nut Boiler Screws.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
1/1	1/2½	2/1	4/1	5/9 each

Brass Sleeves.

2 in.	3 in.	3½ in.	4 in.
10d.	1/6	1/7	2/2 each

New River Croydon Ball Valves. S.F.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
2/8	4/8	8/2	13/6	19/- each

Drawn Lead P. & S. Traps with Brass Cleaning Screw.

	1¼ in.	1½ in.	2 in.	3 in.
8 lbs. P. traps ..	2/9	3/5	4/8	8/5 each
8 lbs. S. traps ..	2/11	3/9	5/8	10/6 ,,

Copper—	£ s. d.		
Strong Sheet ....per lb.	0 2 3	..	—
Thin ,, ... ,,	0 2 4	..	—
Copper nails .... ,,	0 2 3	..	—
Copper wire .... ,,	0 2 4	..	—
Tin—English Ingots ,,	0 2 4	..	—
Solder—Plumbers' ,,	0 1 2	..	—
Tinmen's ,,	0 1 4	..	—
Blowpipe ,,	0 1 7	..	—

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES AND IN SQUARES IN ORDINARY SIZES.

	Per Ft.		Per Ft.
15 oz. fourths	3½d.	32 oz. fourths.....	8½d.
15 ,, thirds	4½d.	32 ,, thirds.....	10½d.
21 ,, fourths	5d.	Obscured Sheet, 15oz.	4d.
21 ,, thirds	6½d.	21 ,,	5½d.
26 ,, fourths	6d.	Fluted 15oz. 6½d., 21oz.	9½d.
26 ,, thirds.....	7½d.	En'lied 15 ,, 5½d., 21 ,,	7½d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES. Per Ft.

⅛ Rolled plate	4½d.
3/16 Rough rolled	5½d.
¼ Rough rolled	5½d.
Figured Rolled, Oxford Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish white.....	6½d.
Ditto, tinted	9d.
Rolled Sheet	6d.
White Rolled Cathedral	5½d.
Tinted do.	7½d.

Cast Plate is same price as rough rolled.

* The information given on this page has been specially compiled for The Builder and is copyright. Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

PRICES CURRENT OF MATERIALS (*contd.*)

PAINTS, &c.		£	s.	d.
Raw Linseed Oil, in pipes.....	per gallon	0	4	5
" " " in barrels.....	"	0	4	7
" " " in drums.....	"	0	4	10
Boiled " " in barrels	"	0	4	11
" " " in drums	"	0	5	1
Turpentine in barrels.....	"	0	9	5
" in drums (10 gall.)...	"	0	9	8
Genuine Ground English White Lead, per ton (In not less than 5 cwt. casks.)		58	15	0
GENUINE WHITE LEAD PAINT— "Father Thames," "Nine Elms," "Park," "Supremus" and other best brands (in 14 lb. tins) not less than 5 cwt. lots.....per ton delivered		80	15	0
Red Lead, Dry (rackages extra)....per ton		42	0	0
Best Linseed Oil Futty.....per cwt.		0	16	0
Filocol .....per cwt.		0	15	6
Size, X D Quality.....fkn.		0	3	6

VARNISHES, &c.	Per gallon	£	s.	d.
Oak Varnish	Outside	0	14	0
Fine ditto	ditto	0	16	0
Fine Copal	ditto	0	18	0
Pale Copal	ditto	1	0	0
Pale Copal Carriage	ditto	1	4	0
Best ditto	ditto	1	12	0
Floor Varnish	Inside	0	18	0
Fine Pale Paper	ditto	0	18	0
Fine Copal Cabinet	ditto	1	2	6
Fine Copal flatting	ditto	1	0	6
Hard drying Oak	ditto	0	18	0
Fine Hard drying Oak	ditto	0	19	0
Fine Copal Varnish	ditto	1	0	0
Pale ditto	ditto	1	2	0
Best ditto	ditto	1	12	0
Best Japan Gold Size.....		0	12	0
Best Black Japan		0	12	0
Oak and Mahogany Stain (water).....		0	12	0
Brunswick Black		0	9	0
Berlin Black		0	14	0
Knotting (patent)		1	5	0
French and Brush Polish		0	17	6
Liquid Dryers in Terebine.....		0	9	0
Cuirass Black Enamel.....		0	7	0

TRADE NEWS.

Boyle's latest patent "Air-Pump" ventilators have been applied to the Electric Power Station Douglas, I. of Man. These were supplied by Messrs. Robert Boyle & Son, ventilating engineers, Holborn-viaduct, London.

Wheeler & Comyn Ching (Asia), Ltd., are carrying out contracts amounting to about £70,000 for heating, ventilating and vacuum cleaning in three large buildings at Shanghai, and have secured a further contract for the Yokohama Specie Bank, Shanghai.

Mr. Frank S. Mayo, of 11, Queen Victoria-street, London, E.C., informs us that he has been appointed sole agent for London for the Heather Brick & Terracotta Co. The firm are continuing to manufacture their pressed bricks, also smooth-faced wire cuts and hand-made sand-faced bricks. They also manufacture hollow floor blocks and tubes in various sizes.

Messrs. Engert & Rolfe, Ltd., Poplar, E.14, send us an illustrated booklet describing their productions, which include rock mastic asphalte for flat and sloping roofs of both concrete and timber construction; paving of footways, roadways, playgrounds and tennis courts, ships' decks, warehouses, cold storage chambers, &c.; dampcoursing, horizontal and vertical; and waterproofing of basements, bridges, conduits, reservoirs, tanks, lily ponds, inspection chambers, &c. The firm are in a position to guarantee the quality of the Rock Mastic Asphalte Cakes employed in their contracts, as they are the actual importers of the crude rock, which is crushed, ground, graded and cooked at their works. "Lithonite" roofing complies with the building by-laws, and is a fire insurance tariff roof. As no drips or rolls are required, it adapts itself to the most complicated ground plan. It is not affected by slight settlement, nor vibration from machinery or heavy traffic, shrinkage of boarding, nor the contraction or expansion of iron or steel.

We have received Catalogue No. 44 (Sanitary Section) from Messrs. O'Brien, Thomas & Co., 17 and 18, Upper Thames-street, E.C.4. The list contains illustrations and latest prices of sanitary goods suitable for all classes of property. The firm stock many goods of an exclusive design, which can only be seen in their showrooms. The goods are artistically arranged with their component parts, and are carefully classified to facilitate selection. The model bathrooms are fitted up with every modern requirement and contain many labour-saving devices.

NEW BUILDINGS IN SCOTLAND.

West Calder.—Houses.—The Calder District Committee of the Midlothian County Council has agreed to build 24 more houses at West Calder.

Dunkeld.—School.—The Perthshire Education Authority is considering some sites for the erection of a new school for Dunkeld and Birnam.

Kirkintilloch.—Church.—Mrs. Thomson, Greenfield, Alloa, has offered to erect a new church for the congregation of St. David's United Free Church, Kirkintilloch. Plans have been approved for a building to accommodate 640 persons, to be erected on the site of the present manse.

Leith.—Public Hall and Library.—The Edinburgh Town Council is considering the proposal to acquire an old manse and grounds in North Leith for the provision of a public hall and public library for the district.

Airdrie.—Plans.—The Dean of Guild Court has passed the following plans: A. M. Morrison, Caledonian Wire Rope Works, for six-apartment bungalow, in Drumbathie-road; John Cuthill Sword, for motor garage and workshop at junction of Graham-street and Gartlea-road; and the Burgh War Memorial Committee to erect the town's war memorial at the entrance to Airdrie House-avenue.

Glasgow.—Housing Scheme.—The Housing Committee recommends the purchase of areas of ground at Crossmyloof and Langlands, Govan, for building purposes. The Crossmyloof area is 9½ acres, and is bounded by the Norham-street and Moss-side-road. The ground at Govan fronts Langlands-road and extends to about 6½ acres. This ground will also give improved access to Drumoyne housing scheme. Sufficient ground available for the erection of a hall for Govan district is recommended.

Perth.—Houses.—Arthur Bell & Sons, Perth, who recently acquired the farms of Muirhall and Gannochy, near Perth, intend to build workmen's houses at Gannochy. The Corporation Water Committee has under consideration a communication from them inquiring if the Town Council is prepared to sell its rights in the old Kinnoul water undertaking under the Perth Water Act, 1877. The Committee has remitted the matter to the convener and town clerk, with powers.

Dundee.—Houses.—The Housing Committee has asked for a joint report from the city architect and the city engineer with regard to the proposed erection of two-roomed tenement houses with modern conveniences.—Plans of the following new buildings have been submitted to the Works Committee of the Town Council: Baltic-street, restoration of warehouse, for W. F. Soutar & Co.; Brown-street, sheds for Jute Industries, Ltd.; Frederick-street, Downfield, a garage and offices for J. Ford; Hawkhill, a shop for A. Cabrelli; Overgate, alterations to premises for A. Massey & Sons, Ltd.; South Lindsay-street, alterations to premises for Miss M. Noble's trustees; Strathern-road, Broughty Ferry, alterations to house for A. Mann; Strathmartine-road, shop and workshop for J. Murray; Strathmartine-road, a temporary shop for W. Walker.

Edinburgh.—Plans.—The following plans have been approved by the Corporation: The Bonnington United Free Church, a mission hall at Lindsay-road, Leith; Education Board of the Merchant Co., a pavilion at East Fettes-avenue; Mr. A. Morrison, two houses at Barony-terrace, Corstorphine; Mr. G. S. Peat, house at Morningside-grove; Scottish Garden City Housing Co., Ltd., house at 1, Barnshot-road, Colinton, and six houses at Comiston-road; Mr. T. Topping, eight houses in Mayfield-road; Mr. W. C. Johnson, the conversion of a house at 29, Palmerston-place, into three separate houses; McVitie & Price, alterations at Factory, Robertson-avenue, and extensions to factory buildings at Stewart-terrace.

Falkirk.—Infirmary.—The Managers of the Falkirk and District Infirmary have purchased a site at a cost of £8,500 for a new infirmary.—An application by the Forth & Clyde & Sunnyside Iron Co., to erect new dressing and fitting shops at their works at an estimated cost of £2,400, has been granted, subject to the method of ventilation being altered to suit the views of the Court; Grangemouth Iron Co., Grange Iron Works, has been authorised to take down and reconstruct moulding shops, at an estimated cost of £2,200; Falkirk Iron Co., Ltd., will proceed with the erection of a new steel roofing for the existing dressing shop, at a cost of £3,000; Mr. J. C. Stewart, 19, Graham's-road, Falkirk, will build a garage at the rear of his property, at a cost of £200; and Mr. G. Inglis will reconstruct the printing works at Howgate.

Greenock.—Plans.—The Dean of Guild Court has passed the following plans: St. Dunstan's Blinded Soldiers' and Sailors' After-care Committee, a workshop, Murdieston-street; Thomas Rae, printer, a covered court at 7, Cowgate-street; R. M. Agnew, a garage at Wellbeck-street; Fleming, Reid & Co., a petrol store. Plans submitted by the Scottish Veteran's Garden City Association for the erection of a third block of dwellings at Kitchener-place, and by Greenock Corporation for a pavilion and shelter at Lady Octavia Park, were deferred for certain alterations to be made.

Kingseat.—Villas.—The Kingseat Mental Hospital Committee of the Aberdeen City District Board of Control have recommended to that body that more villas should be erected, one villa for male and one for female patients, with accommodation for 60 beds each. They also recommended the extension of the nurses' home to provide for accommodation to the extent of from 18 to 24 beds more.

Bristol's Slum Clearance Scheme.

At the last meeting of the Bristol City Council a report of the Housing Committee in connection with the slum clearance scheme was considered. The report recommended that application should be made to the Ministry of Health for approval of the proposed purchase of a plot of land, having an area of 5 acres, 13 perches, situated at Russell Town-avenue, at the price of £6,581, which the Committee considered admirably suited for the purpose of rehousing the population to be displaced from insanitary areas. Objection to the proposal came from several members on the ground that the proposed site was in a crowded part of the city, and the opinion was expressed that the Committee should go to the outskirts of the city when arranging for the rehousing of the displaced people. After some discussion an amendment to refer the report back for information as to the plans for dealing with the land, and the number of houses per acre to be erected thereon, was carried by 28 to 27 votes.

Land for a Cemetery.

Mr. J. D. Wallis, Official Arbitrator, sitting recently at New Quay, Cardiganshire, heard a claim by Mr. John Thomas, as owner, and Mr. John Davies, as tenant, against the New Quay Urban District Council, concerning the Council's compulsory acquisition of 3 acres, 2 roods, 12 poles of land for the purpose of a cemetery.

The owner said the land formed part of a farm, which was let on a yearly tenancy to Mr Davies. The rent, plus tithe, was £109 12s. 8d. for a total area of 134 acres.

Mr. John Evans, J.P., auctioneer and valuer, of Cardigan, on behalf of the Council, said the land in question had no building value. After deducting cost of redeeming tithe he reached a valuation of £138 2s.

The Official Arbitrator has since awarded that the Acquiring Authority is to pay to the owner the sum of £175 as purchase money and compensation, and to pay the fees on the award. Each party is to pay their own costs.

Regarding the tenant's claim, the Arbitrator has awarded that the Acquiring Authority is to pay the sum of £7 for tenant-right interest and compensation, and to pay the fees on the award.

CURRENT PRICES FOR BUILDING WORK IN LONDON.*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	12	6
Add if in clay	" "	1	3
Add for every additional depth of 6 ft.	" "	0	6
Planking and strutting to trenches	per foot super	0	5
Do. to sides of excavation, including shoring	" "	1	0

CONCRETOR.

Portland cement concrete in foundation 1 to 6	per yard cube	36	0
Add if in underpinning in short lengths	" "	8	0
Add if in floors 6 in. thick	" "	3	6
Add if in beams	" "	4	0
Add if aggregate 1 : 2: 4	" "	10	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	3	3

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	31	0	0
Add if in stocks	"	38	15	0
Add if in Staffordshire blues	"	22	0	0
Add if in Portland cement and sand	"	2	0	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

Neat flat struck or weathered joint	" "	0	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	" "	0	0	10
Axed in stocks	" "	0	1	9
Rubbed and gauged jointed in putty camber or segmental	" "	0	6	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1	2
Setting ordinary register grates and stoves	each	1	0	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	4	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard sup.	4	3
Three-quarter-inch vertical damp course	" "	9	0
½ inch on flats in two thicknesses	" "	6	6
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	3

MASON.

York stone templates fixed	per foot cube	12	6
York stone sills fixed	" "	23	0
Bath stone and all labour fixed	" "	10	6
Portland stone fixed	" "	19	6

SLATER.

Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	72	9
Do. 20 in. × 10 in. Do. Do.	"	80	9
Do. 24 in. × 12 in. Do. Do.	"	90	0

CARPENTER AND JOINER.

Fir framed in plates	per foot cube	5	3	
Do. joists	" "	5	9	
Do. roofs, floors and partitions	" "	6	3	
Do. trusses	" "	8	3	

		¾"	1"	1¼"	2"
Deal rough close boarding	per sq.	38/-	44/-	50/-	80/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	50	0
Do. to beams	per ft. sup.	1	0
Centres for arches	"	1	6
Gutter boards and bearers	"	1	0

FLOORING.		¾"	1"	1¼"	1½"
Deal-edges shot	per sq.		49/-	58/-	67/-
Do. tongued and grooved	"		54/-	65/-	72/-
Do. matchings	"	45/-	55/-		
Moulded skirting, including backings and grounds	per ft. sup.	1/6	1/9	2/0	2/6

SASHES AND FRAMES.		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	" "	2	1
Add for fitting and fixing	" "	0	4
Deal-cased frames with 1 in. inner and outer linings, 1¼ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares double hung, double hung with pulleys, lines and weights; average size	" "	3	9

DOORS.		1¼"	1¾"	2"
Two-panel square framed	per ft. sup.	2/1	2/4	2/6
Four-panel Do.	"	2/5	2/8	2/11
Two-panel moulded both sides	"	2/8	2/11	3/2
Four-panel Do. Do.	"	2/11	3/2	3/5

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	14	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	1/8	1 9	2/0
Deal shelves and bearers	"	1/5	1/7	1/10
Add if cross tongued	"	2d.	2d	2d.

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets		2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed		1/8	2/-	2/2	2/8	—

			s.	d.
Housings for steps and risers		each	0	11
Deal balusters, 1 in. × 1¼ in.		per ft. run	0	9
Mahogany handrail; average 3 in. × 3 in.		" "	6	0
Add if ramped		" "	11	10
Add if wreathed		" "	23	9

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/4
Sash fasteners	11½d.	Mortice locks	5/3
Casement fasteners	1/5	Patent spring hinges and letting in to floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	17	0
Plain compound girders	"	20	0
Do. stanchions	"	23	0
In roof work	"	28	0

RAIN-WATER GOODS.

			3"	4"	5"	6"
Half-round plain rebated joints	ft. run		1/11	2/4½	3/7	4/-
Ogee Do. Do.	"		2/4½	3/1	3/10	4/9
Rain-water pipes with ears	"		2/9	3/7		
Extra for shoes and bends	each		4/4	5/11		
Do. stopped ends	"		1/11	2/4½	3/7	4/-
Do. nozzles for inlets	"		2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	52	0
Do. Do. in flats	"	49	0
Extra labour and solder in coated cesspools	each	6	9
Welt joint	per ft. run.	0	6
Soldered seam	" "	1	9
Copper nailing	" "	0	6

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	10d.	1/6	1/9	3/1	3/10	
Do. service	"	1/5	1/11	2/3	3/6		
Do. soil	"						6/2
Bends in lead pipe	each					3/3	8/2
Soldered stop ends	"	1/2	1/8	2/1	2/10	3/6	
Red lead joints	"	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	"	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	"				14/7	19/6	
Bib cocks and joints	"	6/4	9/7	15/4	41/-		
Stop cocks and joints	"	15/4	17/2	25/8	64 -		

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	2	3
Do. Do. Sirapite	"	2	6
Do. Do. Keen's	"	3	6
Add sawn lathing	"	1	5
Add metal lathing	"	2	3
Portland cement screed	"	1	11
Do. plain face	"	3	4
Mouldings in plaster	per 1 girth	0	2½
One-and-a-half granolithic pavings	per yard sup.	5	9

GLAZIER.

		s.	d.
21 oz. sheet plain	per foot sup.	0	9
26 oz. Do.	" "	1	1
Obscured sheet	" "	1	3
¼ in. rolled plate	" "	0	9
¼ in. rough rolled or cast plate	" "	0	11
¼ in. wired cast plate	" "	1	5

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	0	10
Knotting and priming	" "	0	7
Plain painting 1 coat	" "	0	9
Do. 2 coats	" "	1	2
Do. 3 coats	" "	1	9
Do. 4 coats	" "	2	4
Graining	" "	2	3
Varnishing twice	" "	1	9
Sizing	" "	0	3
Flatting	" "	0	7
Enamel	" "	1	2
Wax polishing	per foot sup.	0	8
French polishing	" "	1	2
Preparing for and hanging paper	per piece	2/- to 4/-	

* These prices apply to new buildings only. They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 11 should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

PATENTS.

APPLICATIONS PUBLISHED.

189,671.—L. F. Shellard: Machine for covering roads with sand or other material.

189,681.—W. T. Long: Wrenches.

189,684.—Siemens Bros. & Co., Ltd., and H. G. Wood: Electric fuses, cut-outs, &c.

184,768.—J. B. Dandois et Cie: Holding-devices for sliding windows.

189,689.—G. W. Stokes: Metal reinforcement for concrete.

189,708.—W. Hadley: Window sash fasteners.

178,420.—L. Chapuis: Flushing cisterns.

188,742.—G. F. Carter: Door fasteners and the manufacture of the same.

188,746.—J. R. Armstrong-Kelly: Shovels, spades and digging forks.

188,776.—H. D. Fitzpatrick (L. Dusart): Machine for moulding roofing tiles.

188,779.—R. G. Kirton: Concrete buildings.

188,805.—J. H. P. Wood and R. C. Cameron: Fencing posts made of reinforced concrete, and moulds for producing the same.

188,849.—G. Atterbury: Method of and apparatus for casting cementitious blocks.

188,860.—A. W. Nelson and E. A. Cross: Means for supporting window sashes.

188,904.—J. W. Martin: Glazed tiles.

188,955.—W. A. Williams and North British Rubber Co., Ltd.: Rubber paving and flooring blocks or slabs.

No. 188,990.—J. T. Sandberg: Building-block.

188,993.—Swan, Hunter & Wigham Richardson, Ltd., and G. T. Temple: Vertically-sliding windows.

188,995.—T. J. J. Albrecht: Walls or other constructions, and building-blocks therefor.

189,056.—S. J. Steensen: Flushing-devices for water closets.

182,481.—W. Bachmann: Hinges for cabinet and like doors.

189,073.—L. Wallfisch: Wooden wall.

189,820.—E. A. Mitchell: Pipe couplings.

189,825.—J. H. Castell: Locks.

189,829.—Sir J. I. Thornycroft: Fastening-means for doors.

171,080.—T. J. Costello: Process of and apparatus for heating slabs, billets, &c.

189,852.—A. J. H. Haddan (Titeflex Metal Hose Corporation): Pipe couplings of the swivel type.

189,859.—J. Sawbridge and J. Sawbridge, Jun.: Reversible locks and latches.

189,863.—C. W. Thomas: Gas-fired kilns.

189,868.—C. H. Blakeley: Hand-saws.

189,890.—R. H. Carr and J. P. Guy: Machinery or apparatus for the manufacture of saggars, sinks, and sanitary ware, crucibles, linings for ovens, and quarries.

189,892.—H. Berry: Manufacture of artificial stone and cement.

189,907.—E. E. Greve and Oil Well Supply Co.: Rotary drilling-machines for drilling wells.

* All these applications are now in the stage in which opposition to the grant of Patents upon them may be made.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach him not later than Tuesday evening.

* Denotes *accepted*. † Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
¶ Denotes *accepted subject to modifications*.

ASHTON-UNDER-LYNE.—For the erection of 60 houses on the Heys Estate, for the Corporation:—
*J. H. S. Randall, Ltd. £20,991 13

BILLERICAY.—For additions to the infirmary, for the Board of Guardians:—
*Durston & Rogers, Brentwood £2,283

BLYTH.—For the erection of a new fire station:—
*Messrs. Hedley & Sons, Blyth £5,690

CANNOCK.—For the erection of 22 bungalows, for the U.D.C.:—

J. McLean ..... per bungalow	£346	1 6
Lea & Siddalls .. " "	331	2 6
Richards & Smith " "	330	0 0
*A. Darrall ..... " "	327	11 0

DUDLEY.—Erection of twenty houses, for the T.C.:—
*Roberts (Birmingham), Ltd. £7,260

GLASGOW.—Renewal of roof sheeting at purifier house at Dalmarnock Gas Works, for the T.C.:—
*Sir W. Arrol & Co. £1,587 10

HULL.—For additions to buildings at High Bransholme Farm, for the T.C.:—
*Holiday & Barker £750

HULL.—Erection of pavilion, No. 2, on the Cottingham Castle Estate, for the T.C.:—
*P. T. Kettlewell £8,713

LLANWRTYD.—For widening bridge, for the Breconshire C.C. Mr. W. L. Harpur, County Surveyor, County Hall, Brecon:—

Robt. Meredith, Builth Wells	£1,738	16	0
Ben Jenkins, Brecon	1,650	0	0
T. D. Evans & Co., Talgarth	1,512	18	6
J. M. Broadfoot, Newport	1,474	12	6
D. E. Richards, Llanwrtyd	1,368	10	0
N. Moss, Merthyr	1,309	15	6
Charles Thomas & Co., Llandilo	1,269	13	0
W. Blackburn & Co., Treharris	1,175	14	0
Lewis Rugg & Co., London	1,060	0	0
A. E. Farr, London	1,038	0	0
*Fothergill Bros., Exeter	1,029	9	3

LONDON.—For (*a*) escalator work at Moorgate street; and (*b*) escalators at Shepherd's Bush, for the Underground Railways Co.:—
*(*a*) Foundations Co., Ltd. £42,574
*(*b*) Cochrane & Sons 21,709

LONDON.—For making up Sunray-avenue, for the Camberwell B.C.:—

*G. J. Anderson, Poplar, E.14..	£5,508	7	0
John Mowlem & Co., Ltd., 41, Ebury Bridge-road	5,907	13	11
W. H. Wheeler & Co., Ltd., 14, New Kent-road	6,249	3	9
Wm. Shepherd & Sons, Ltd., Rochdale	6,317	16	5
Hy. Woodhams & Sons, Catford	6,725	9	3
London County Public Works, Ltd., Gray's Inn, W.C.	6,974	4	0
Wm. Walkerdine, Ltd., N. Kensington	7,877	0	6
E. W. Dowden, Dartford.....	8,951	4	0
R. Merton Hughes, Barons-court	11,415	15	6

MELTON MOWBRAY.—For asphalting and repairing footpaths, for the R.D.C. Mr. E. C. Moorhouse, Wyndham-avenue, Melton Mowbray:—
E. G. Cobley, Melton Mowbray—New work, 4s. per yard; Topping, 2s. 5d. per yard; Tarring, 5d. per yard.

NORTHAMPTON.—For erection of houses on Bective Estate, for the T.C.:—
10 houses, "B3" type—
Messrs. E. Green & Son, Northampton £4,153
14 houses, "A3" type—
Messrs. E. Green & Son 5,005
4 houses, "B3" type—
Messrs. E. Green & Son 1,583

NOTTINGHAM.—For internal cleaning and painting at 11 schools and Education offices, for the T.C. The Education Officer, South-parade, Nottingham:—

Huntingdon-street Council School: T. Barlow & Co., Nottingham ..	£390	0	0
Queen's-walk Council School: T. Barlow & Co., Nottingham ..	120	10	0
Ropewalk Council School: T. Barlow & Co., Nottingham ..	400	0	0
St. Matthias' Trust School: T. Barlow & Co., Nottingham ..	247	0	0
St. George's Trust School: J. Collinson & Sons, Arkwright-street, Nottingham	80	0	0
Colwick-street Council School: H. Rainbow, Woodborough-road, Nottingham	130	0	0
New Radford Trust School: H. Rainbow, Woodborough-road, Nottingham	268	15	0
Hyson-green Trust School: Simms, Son & Cooke, Weekday-cross, Nottingham	440	10	0
London-road Council School: Simms, Son & Cooke, Weekday-cross, Nottingham	310	18	0
Bulwell Trust School: L. White, Derby-road, Nottingham	289	19	6
Basford Temporary Council School: A. Spencer, Main-street, Bulwell	135	0	0
Education Offices: W. Bee, Lammas-street, Nottingham	398	13	10

NUNEATON.—For laying about 1,250 lin. yards of 9 in. cast-iron socketed pipes, for the T.C. Mr. R. C. Moon, Water Engineer, Municipal Offices, Queen's-road, Nuneaton:—

Lewis & Beck, Birmingham ..	£1,427	17	5
*Martin & Element, Smethwick..	984	11	0

RICHMOND.—For formation of lecture room on first floor of library, for the T.C.:—
*R. Cowper & Son £133

SALFORD.—For supply of materials to the Highway and Paving Committee:—

*C. H. Phillips, Manchester—200 tons Portland cement.....	£583	6	8
*Rudman & Phillipson, Ltd., Entwistle—Best Barns flags	140	0	0
Curbs	268	15	0
*John J. Lee, Manchester—250 tons stone chippings.....	137	10	0
*Partington Steel & Iron Co., Ltd., Irlam—470 tons tarred slag.....	583	7	6
*John J. Lee, Manchester (agent for Tarmac, Ltd., Wolverhampton)—470 tons tarred slag.....	675	1	8
*John Crankshaw Co., Ltd., Horwich—Earthenware pipes	171	15	9
*Penmaenmawr & Welsh Granite Co., Ltd., Liverpool—1,200 tons granite setts 3,585	0	0	
150 tons granite chippings.....	127	10	0
*E. Mathews & Co., London—1,200 tons Norwegian granite setts	2,745	0	0
*A. H. Evans, Liverpool—1,200 tons Norwegian granite setts	2,260	0	0
*Cambrian Granite Quarries, Ltd., Manchester—150 tons granite chippings.....	118	2	6
*Buxton Lime Firms Co., Ltd., Buxton—250 tons limestone chippings....	171	17	6

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SALFORD.—For making-up back streets behind Acresfield and Claremont roads, for the T.C. :—
*S. Willshaw £604 8 7

SALFORD.—For electric lighting installation at Grecian-street boys' school, for the T.C. :—
*County Electrical Co., Salford..... £240 5

SALFORD.—Supply of heating boiler at Leicester-road Council School, for the T.C. :—
*Saunders & Taylor, Manchester.. £119 13 6

SALFORD.—For erection of public urinal in Liverpool-street Recreation Ground, for the T.C. :—
*A. Fenton £261

SALFORD.—Erection of public convenience at Cattle Market, for the T.C. :—
*A. Fenton £925

SHEFFIELD.—For 43 houses at Park-lane site Handsworth. Mr. F. E. P. Edwards, F.R.I.B.A., City Architect, Town Hall, Sheffield :—
Section I. 5 Houses—
Bramwell, Lighthall & Co., Ltd., Sheffield.... £1,595
Sections II and III. 38 Houses—
Evan Bros., Alfreton £11,369

SOUTHWOLD.—Erection of two lavatories, for the T.C. :—
*Grindell & Tuthill..... £695 10

STRETFORD.—For the erection of fifty houses, for the U.D.C. :—
*J. Lane & Sons..... £19,201 19 10

STRETFORD.—For lighting in Chorlton and Upper Chorlton roads, for the U.D.C. :—
*Wardle Engineering Co. £517

STRETFORD.—Provision of a weighbridge at the Empress-street destructor works, for the U.D.C. :—
*Henry Pooley & Son, Ltd., for weighbridge £400 0
*Wm. Thorpe & Son, Ltd., for foundation work 99 10

SWANSEA.—For painting at judges' lodgings, for the T.C. :—
*Wilson & Co. £515

SWANSEA.—For construction of two conveniences at Welcome-lane and Langland Bay, for the T.C. :—
*T. Richards..... £3,300 and £2,895

WAKEFIELD.—For alterations to lavatories at the Town Hall, for the T.C. :—
*J. Woodhead £463

WEYMOUTH.—For alterations, &c., to convenience at Market House, for the T.C. :—
Bird & Cox £297 17 9
T. Conway..... 277 0 0
*Jenkins, Hitt & Grant 196 0 0

WOMBWELL.—For erection of 20 "A" type houses in King's-road, for the U.D.C. Mr. D. H. Roberts, architect, Park-street, Wombwell :—

	Per house.
W. H. Fuller, Wath.....	£361 10 0
J. H. S. Randall, Ltd., Sheffield..	355 19 0
A. J. Pugh, Rawmarsh.....	346 0 0
W. Johnson, Wombwell.....	341 15 0
Smith Bros. (Burnley), Ltd., near Wakefield	333 0 0
Barton & Hodgson, Sheffield....	333 0 0
F. B. Ward & Son, Wombwell..	331 0 0
Thompson, Wombwell	330 0 0
A. Taylor & Son, Wombwell....	327 17 0
P. Rhodes, Leeds.....	327 0 0
Mason & Quince, Sheffield.....	325 0 0
E. Oakland & Co., Wombwell..	320 0 0
Bailey & Walmsley, Thurnscoe..	315 0 0
*S. Dryden, Stainforth.....	314 18 1

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